

UNIVERSITY OF THE PHILIPPINES MANILA  
COLLEGE OF ARTS AND SCIENCES  
DEPARTMENT OF PHYSICAL SCIENCES AND MATHEMATICS

INSTITUTE OF MOLECULAR BIOLOGY AND  
BIOTECHNOLOGY BIOBANK SPECIMEN SAMPLE  
MONITORING SYSTEM

A special problem in partial fulfillment  
of the requirements for the degree of  
**Bachelor of Science in Computer Science**

Submitted by:

Sheila Mae F. Jornadal

June 2015

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## ACCEPTANCE SHEET

The Special Problem entitled "Institute of Molecular Biology and Biotechnology Biobank Specimen Sample Monitoring System" prepared and submitted by Sheila Mae F. Jornadal in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science has been examined and is recommended for acceptance.

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## **Abstract**

Managing large number of specimen samples used for their research projects is one of the huge burdens faced by many health institutions like the Institute of Molecular Biology and Biotechnology (IMBB) of the National Institute of Health (NIH) in the Philippines. As a solution for the specified problem, the study will propose a system that will help researchers to monitor all the access on each available samples and keep track of sample's amount and storage location inside a freezer. The monitoring system will be supported by a barcode scanning mechanism.

*Keywords:* samples, biobank, specimen, monitoring system, imbb

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# I. Introduction

## A. Background of the Study

Nowadays, health problems are the common burden faced by many people. There are a lot of them who are suffering from different kinds of common and life-threatening diseases like cancer, diabetes, heart disease, etc. As a solution, a field called medical research aims to prevent, cure, and lessen the impact of such illnesses by providing substantial information and insights about the disease's nature. Researchers, who perform the medical research, undergo many procedures in investigating the probable cause and potential treatment for the diseases. One of these procedures include the thorough examination and observation on the different types of sample materials called biospecimens, or simply specimens, which are usually derived from different sources.

Specimen is a term for a biological material which may be a serum, fecal, sputum, tissue, blood, urine, saliva, cell, protein, ribonucleic acid (RNA), deoxyribonucleic acid (DNA), and plasma used in medical research. It is acquired from different sources including animals, but usually from human [1]. This material is very significant in the diagnosis and analysis of diseases. Researchers, upon performing correctly all the defined tests on a specific specimen, will be able to extract vital information that will aid in the analysis and prevention of a certain illness. Thus, it is very important to protect the integrity and quality of these biological materials as well as the data related to each of it within a secured location known as biobank.

Biobank covers collection of specimens from animals and humans. It accepts, processes, stores, and distributes specimens and their associated data for the benefit of research and clinical care. Organizations like the International Society for Biological and Environmental Repositories (ISBER) provide certain guidelines for standard operating procedures to create and operate a biobank [2]. Today, there exist a large number of biobanks developed in several countries in order to collect,

analyze, and store phenotypic and genetic information on sample specimens [3].

The Institute of Molecular Biology and Biotechnology (IMBB) is one of the many institutions that performs biobanking. IMBB, also called Biotech-Manila, is an institution under the National Institute of Health (NIH) that helps in the analysis and diagnosis of diseases such as dengue, tuberculosis, influenza, and others. IMBB is conducting advanced medical and health-related biotechnology researches in coordination with the Department of Science and Technology (DOST) and University of the Philippines (UP). Its researches are more focused on the top 10 causes of morbidity and mortality in the Philippines [4].

In line with this, researchers working in IMBB collect and handle many specimens of different types such as whole blood, serum, plasma, stool, tissue, cell culture, microbial culture, urine, cerebrospinal fluid, and others that are necessary and relevant for the projects that they handle and implement. These specimens are obtained from different participants, usually patients, from different hospitals or institutions who completely achieve the requirements for a certain project.

Upon the completion of procedures such as collection and initial processing, the specimen samples are required to be stored inside a storage container like a freezer located inside their laboratory to preserve their quality and integrity for further testing and examination. They follow the freezer-rack-box hierarchy in storing the specimen samples inside a particular freezer.

With the development and application of information technology (IT) solutions, the value of biobanks for research raises and makes them more accessible. It meets the societal demand for better health care through improved therapies and medications as a result of medical research [5]. Laboratory Information Management System (LIMS) is an example of a widely used software in managing and tracking samples in clinical laboratories [6].

## **B. Statement of the Problem**

With the collection of a huge number of specimen samples of different types obtained from different patients, IMBB biobank is experiencing some problems in handling these significant materials. Such burdens include inability to monitor the available or current amount of each specimen samples dedicated under one or many projects, inability to monitor all the specimen sample access of each researchers, and time-consuming searches for specimen samples to be retrieved from the freezer. This is due to the absence of a standard system that will keep track and monitor each specimen samples under each research projects.

## **C. Objectives of the Study**

The study aims to develop a monitoring system that will store specimen sample's information, keep track of their storage location, and monitor specimen sample access inside the institute.

The specimen sample monitoring system features the following:

1. Allows the researcher to:
  - (a) View his/her user account
  - (b) Update his/her user account
  - (c) View list of his/her research projects
  - (d) View research project information
  - (e) View list of specimen sample records in his/her research projects
  - (f) Search specimen sample in his/her research projects through search bar
  - (g) Update test information part on the specimen sample record in his/her research projects
  - (h) Log access of specimen sample in his/her research projects through barcode scanner or manual input
    - volume obtained from the specimen sample

- test to be performed on the specimen sample
- specimen sample barcode

2. Allows the project head to:

- (a) Function as a researcher
- (b) Update research project information
- (c) Add specimen sample records in his/her research projects
  - basic information
  - source information
  - location information
- (d) Update specimen sample record in his/her research projects
- (e) View access logs on specimen samples in his/her research project
- (f) View statistical reports about the specimen samples of his/her particular research project

3. Allows the system administrator to:

- (a) Manage user accounts
  - Add user accounts
  - Activate/Deactivate user accounts
- (b) View list of user accounts
- (c) Manage research projects
  - Add new research project
  - Update research project
  - Assign project head and researchers on research projects
- (d) View list of research projects
- (e) View system logs (audit trails)
  - date and time of the log

- user who performed the log
- details of the log

## **D. Significance of the Project**

The availability of the proposed system will be beneficial for the researchers of the Institute of Molecular Biology and Biotechnology. The system will enable them to monitor the available and current amount of all the specimen samples of each project as well as the access of all the researchers on the specimen sample. It will also lessen the time-consuming searches of specimen in the freezers that may lead to specimen sample degradation.

## **E. Scope and Limitations**

The following are the scope and limitations of the system:

1. The proposed system is designed only to be used by researchers of the IMBB.
2. The proposed system is bound by existing processes and requirements of the IMBB and sample data confidentiality guidelines.
3. The proposed system does not include the process of obtaining samples from patients.
4. The researchers and project heads are allowed to view records of specimen samples only within the project that they handle.
5. The project head can view the statistical reports and specimen sample access logs only within the project that they handle.

## **F. Assumptions**

The following are the preliminary assumptions of the system:

1. All the research projects are approved by the Ethics Committee of IMBB.

2. All the specimen samples in each research projects are supported by patient consent and other documents required by the Ethics Committee of IMBB.
3. All data inputs provided by different users are of correct values, formats, and/or data types.
4. The size of the box, rack level, rack, and shelves are fix to accommodate the current setup in IMBB.
5. A specimen sample can be shared between multiple projects if their project head is the same person.
6. There is only one project head for each projects.
7. A numeric naming convention is used in naming the boxes, rack levels, racks, and shelves.

## II. Review of Related Literature

Establishment of large-scale biobanks of human specimens is essential to medical studies. In order to facilitate these long-term studies within a biobank, a reliable system that manages sample is necessary to avoid problems in biobanking such as sample mix up as well as sample loss [6]. In line with this, there are some existing literatures and academic papers that discuss different system used to search, track, and manage samples in different biobanks.

Gostev et. al. [7] designed a web-based application called Sample Availability System (SAIL). The system is mainly use for searching, browsing, and annotating collections of biospecimens. As a central platform, SAIL helps the researchers to integrate their resources and quickly search sample availability.

Gavrielides et. al. [8] presented a platform-independent web-based laboratory information management system for sample and analysis tracking particularly for oncogenomic experiments. Sample information including sample name, sample type, site and histology, and surgery information are submitted to a database. Other information like metadata of the samples such as the date a sample was submitted to the database, last time they were modified, the user who created the sample, and all the users who have edited the sample, and others that are related to the sample experiments are also stored in the database. Each user of the system can list all the samples under a certain project by navigating the project page. They can also search samples through the search form by entering the main attributes of the sample: name, type, site, histology, user who submitted the sample.

Rossum et. al. [9] presented a web application called Sample-based Laboratory Information Management System (SLIMS). It provides researchers and other members of a laboratory with an interface that enables them to view, edit, and add sample information. The system's general features include subject management, sample management, container management, data browsing and searching, etc. SLIMS also contains input validation and user-based editing privileges. It is

also able to produce reports about the subjects and samples. This management system was based on PASSIM [10], a previously published LIMS.

Originally developed for the Translational Research Investigating Biomarker Endpoints in Acute Kidney Injury (TRIBE-AKI) consortium, Nadkarni et. al. [2] designed a biospecimen data management system (BDMS). The system is used to facilitate the workflow of biospecimen collection and analysis. It has a functionality that generates barcode labels for each aliquot container according to the template being designed. Aside from the machine-generated barcode with a check-digit, identifying informations such as patient id, collection date, protocol id, and specimen type can also be included in the label. In addition, the system is also capable of assigning storage location for each specimens, identifying location of a certain specimen, and tracking of sample consumptions. This BDMS communicates with another system, a clinical research information system (CRIS), which is the one responsible for other related processes like specimen consent management.

Norling et. al. [11] designed and proposed a web-based monitoring system of a biobank. The system is able to record the movement of samples inside and outside the biobank and keep track of the opening and closing of freezers. In order to ensure security and integrity of the samples, the system is incorporated with an early warning feature that send alerts via short message service (SMS) or email whenever a record of any measurement exceeds its acceptable limits. Technologies such as python, perl, and php are used to develop the system.

In order to support complex data management needs of biobanks, Dowst et. al. [12] developed a web-based modular system called Acquire. It mainly supports all the major requirements particular for a cancer biobank. Some of its several features include freezer and container management, specimen annotation, and comprehensive reporting and dashboards.

Voegele et. al. [13] developed a three-tier system that enables the monitoring of samples and their position in the hierarchy of containers: liquid nitrogen tanks, freezers, fridges, and dedicated humidity-controlled rooms. The system is also



able to record the history of each sample's movement from retrieval to extraction. Its main features include data insertion through forms or importing pre-formatted csv files, query informations, generate tables, excel files or other types of reports, record sample or container movement, automatic and instant barcode printing, and automatic sending of emails to person-in-charge in case of errors or problems. Technologies such as Oracle database, Oracle forms builder, and Oracle JInitiator plug-in are used to develop the system. Two servers are used in the system: one Linux server and one Windows 2003 application server.

Most of the previously mentioned works used barcode as a unique identifier of a certain sample. But aside from barcode usage, some specimen management systems also take advantage of the new arising technologies like the Radio Frequency Identification (RFID). RFID is a method that allows a system to remotely store and retrieve data using magnetic induction reader and tags [14].

One specimen system proposed by Shim et. al. [14] used RFID technology composed of materials such as radio frequency band reader, a writer for information input and output, an antenna used to facilitate communication between data, and the tag or transponder used to store and save data. Another system that used RFID is the Sample Identification and Tracking System (SITS) designed by Zarabzadeh et. al. [6]. This system is being prototyped in the Prostate Cancer Research Consortium (PCRC) biobank. It has functionalities to identify samples, track samples longitudinal, search samples and aliquots based on attributes, and other administrative functions. Aside from RFID, the system was also based on other technologies such as VB programming language, ASP and AJAX, and Microsoft JET database.

The use of RFID utilizes specimen system. On the other hand, since RFID technology is based on radio waves penetration, there are incidences that its behavior become strange and unpredictable especially when it is near a liquid or metal at certain frequencies. Aside from it, another drawback of using RFID systems is that it is more expensive than barcode systems [15]. It is mainly the reason

why institutes do not adapt this kind of implementation.

Moreover, solutions like commercial softwares that manage daily repository operations and biobank inventory are also available.

According to Dash et. al. [16], numerous number of software vendors are specializing in the field of laboratory information management, particularly in biorepository operations. Some of these entrepreneurs include LabVantage<sup>1</sup>, Thermo Scientific<sup>2</sup>, StarLIMS<sup>3</sup>, HealthCare IT, Inc.<sup>4</sup>, and Information Management Services Inc.<sup>5</sup>. Their products are mostly software systems with capabilities focused on biospecimen tracking, specimen inventory management, clinical data annotation, etc. Other extra features and modules are also available but they usually come at additional costs. For example, LabVantage charges an amount of 87,954.75 USD as a fee to enable a certain feature called "Advanced Storage and Logistics" in using their software. Moreover, StarLIMS charges 9,571.25 USD per user to acquire an access on the basic edition of their document management module, 9,571.25 USD for their batch processing feature, and 33,499.38 USD for their Web services framework. Such costs including license fees restrict most laboratories to adapt these commercial softwares. Although one can expect a quicker and smoother integration when choosing these commercially available software systems, high support and maintenance costs serves as a prohibiting factor [17].

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<sup>1</sup><http://www.labvantage.com/>

<sup>2</sup><http://www.thermoscientific.com/en/home.html>

<sup>3</sup><http://www.starlims.com/en-us/home/>

<sup>4</sup><http://www.healthcit.com/>

<sup>5</sup><http://www.bsissystems.com/>

### **III. Theoretical Framework**

#### **A. Medical Research**

Medical research, also called research study, is a term defined as an organized process of obtaining more knowledge about health in general.[18]. This field is important because it helps to improve the health of people worldwide through the discovery of new and better ways to prevent and treat diseases. It also leads to acquire advance knowledge for the good of society [19]. According to Zerhouni [20], medical research is similar to a detective story that always search for new leads to follow.

#### **B. Specimen**

According to a guide provided by the University of California, San Francisco (UCSF) [21], the term specimen is described as a widely used collection of materials that encompasses a full range of human specimen types such as:

- Sub-cellular components: DNA or RNA
- Cells or tissues from any part of the human body
- Organs: liver, bladder, kidney, heart, placenta, etc.
- Gametes: ova and sperm
- Embryos and fetal tissues
- Bodily products: teeth, hair, nail clippings, sweat, urine, feces
- Blood and blood fractions: plasma, serum, buffy coat, red blood cells
- Saliva and buccal cells
- Others

Among these sample materials, the most common types that are usually archived are tissues. These materials include blood, saliva, hair, nails, epithelia, soft tissues, urine, and other body fluids [22].

Specimens are significant help in the diagnosis and classification of disease processes. Each of them is studied to specifically predict responses to therapy, select effective therapy, identify underlying risks for adverse events, and predict outcomes. The quality of biospecimens, whatever type it is, significantly impacts the quality of test results that may be obtained [16].

### **C. Biobank**

Biobank is defined as a long-term storage and conservation facility of biological specimens with its associated clinical or experimental data to support various scientific investigation [23].

A biobank is made up of two different parts:

- biologic material
- database

Biologic materials are large number of specimens that undergo procedures such as collection, processing and long-time storage within a container like freezers. It may include serum, DNA, RNA, fecal, sputum, and others.

On the other hand, the database contains important information about the demographic and clinical data for each sample and other associated data. It contains data describing the collected items: the type of the material and the details of obtaining, preserving and storage condition. Moreover, it is where they store information derived from the items: pathological findings, biochemical analysis, and the like. They also store or link data associated with the items like the donor, medical case history, and therapies usually supplied from the donors questionnaire [5].

There are several types of biobanks classified according to their purpose and reason. Such biobank types include:

- disease-oriented biobank
- population-based biobank
- case-control biobank
- tissue biobank
- biobanking within clinical trial
- biobanks for cells

Nowadays, biobank is considered a vital tool on the development and implementation of diagnostics and treatment research [24].

#### **D. NIH Institute of Molecular Biology and Biotechnology**

The Institute of Molecular Biology and Biotechnology (IMBB) is one of the 10 institutes working under the National Institute of Health (NIH) in the Philippines. It was created in September 29, 1994 through the effort of the UP Board of Regents; aiming to promote and implement quality research particularly focused on diseases which are considered as the major causes of mortality and morbidity in the country. IMBB, also called Biotech-Manila, is partnered and supported by the DOST and UP to provide medical and health-related biotechnology researches and projects such as molecular diagnostic program, dengue program, tuberculosis program, avian IgY Technology for infectious disease diagnostics and therapeutics, immunonutraceutical research and biosurveillance program [4].

In order to acquire better research process and results, IMBB establishes biobanking in their facility. They handle thousands of collective specimen samples of different types necessary for each of their projects. These samples are usually obtained from the patients with their approval of using their biospecimens for a

certain research purpose. This approval is documented through a patient consent form provided by the researchers.

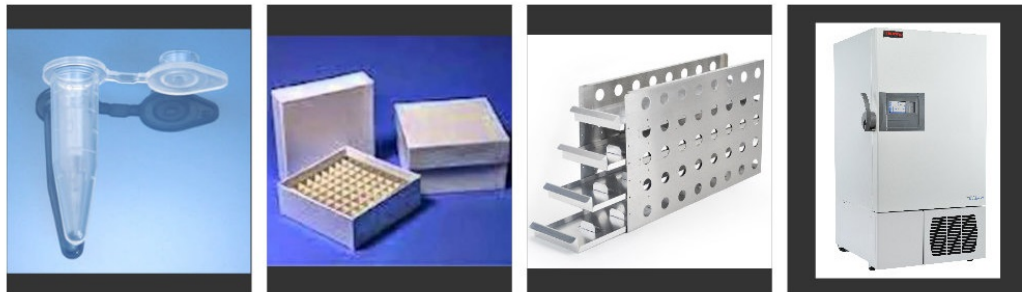


Figure 1: Freezer-Rack-Box Hierarchy

After a successful process of collecting and initial processing of each samples which are stored in a 1.5ml tube, their data will be recorded manually in a log book. After the record has been completed and all the necessary informations are logged, the samples will then be placed in one of the cell of a 9x9 box. This box will be placed in one of the level inside a 4x4 rack which is located in a -80 degrees celsius freezer. The samples will be kept inside the container until it will be used for further testing and examination to be conducted by the researchers. Figure 1 shows an example of each storage location of a biospecimen sample, such as tube<sup>6</sup>, box<sup>7</sup>, rack<sup>8</sup>, and freezer<sup>9</sup>.

## E. Database Management System

A database management system (DBMS) is a software designed to assist in maintaining and utilizing large collections of data. It is composed of programs that enable users to store, modify, and extract information from a database [25] and

<sup>6</sup><http://www.bio-equip.cn/eWebEditor%5CUploadFile%5C13427.jpg>

<sup>7</sup><https://i1.ytimg.com/vi/AGPTOZ2IZEM/hqdefault.jpg>

<sup>8</sup><http://www.thermoscientific.com/content/dam/tfs/LPG/LED/LED%20Product%20Images/Cold%20Storage/Ultra%20low%20Temperature%20Freezers/Racks%20for%20Matrix%20and%20Nunc%20Tubes/CS-Tube%20rack%204%20inner%20door%2017-23%20CF.jpg/jcr:content/renditions/cq5dam.thumbnail.450.450.png>

<sup>9</sup><http://news.thermofisher.com/sites/thermofisher.newshq.businesswire.com/files/CS-HFU500-quarterview.jpg>

ensures accuracy and consistency among different records. Using a DBMS in managing data has many advantages: data independence, efficient data access, data integrity and security, data administration, concurrent access and crash recovery, and reduced application development times [26].

One of the most widely used DBMS is the relational DBMS where data are organized in tables that are flexible to access data in different ways [9]. Some frequently used DBMS examples include MySQL, PostgreSQL, Microsoft Access, SQL Server, and Oracle [27].

## **F. Information System**

An information system (IS) is defined as an integrated set of components for collecting, storing, and processing data. It is used to deliver information and knowledge, as well as to carry out and manage different types of business operations within organizations [28].

IS is widely used in the different sectors including the health sector because it has a great potential of reducing health care cost while improving outcomes and operations such as decision-making, epidemiologic surveillance, health outcomes assessment, program administration, public health planning, and policy analysis [29][30].

## **G. Barcode**

A barcode, described as an "optical Morse code" [31], is a code made up of a group of printed and variously patterned bars and spaces. It contains information (as identification) about the object it labels and designed to be scanned and read into the memory of a computer [32]. It is primarily used to uniquely identify items and also to provide traceability, inventory control, and verification.

As a graphic representation of data, barcode is read using an optical machine [33] called barcode scanner. The scanner measures the lights being reflected and translates the code into combination of numbers and letters. These combinations

are then passed on the computer.

Barcodes are classified based on two categories: 1D (linear) and 2D.

Linear barcode are read using a laser scanner. It can be further subclassified into two categories:

1. Continuous or Discrete: In continuous symbologies, one character ends with a space and the next beginning with a bar, or vice versa; whereas in discrete, character starts and ends with bars;
2. 2-widths or Many-widths: In 2-width symbologies, bars and spaces are wide and narrow; whereas in many-width symbologies, the bars and spaces are multiples of the basic width.

On the other hand, 2D barcodes have to be scanned by an image-based scanner using a CCD or other digital camera sensor technology like smartphones.

The figure below shows an example of a linear barcode<sup>10</sup> and a 2-dimensional barcode<sup>11</sup> respectively.



Figure 2: One-Dimensional and Two-Dimensional Barcode

Barcode does not hold descriptive data because it only serves a reference used to look up an associated record with its important data and information. Symbology, the mapping between messages and barcodes, enables the information to be read when a barcode is scanned and helps a printer understand the information to be translated into a label. Numerous systems of encoding data or symbologies [34] are available such as UPC/EAN, Interleaved 2 of 5 (I of 5), Codabar, Code 39, and Code 128.

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<sup>10</sup>[https://kungsirikarn.files.wordpress.com/2008/08/1d-barcode\\_n.png](https://kungsirikarn.files.wordpress.com/2008/08/1d-barcode_n.png)

<sup>11</sup><http://optional.is/required/wp-content/uploads/2009/06/barcode-qr.png>



The concept of barcoding was introduced to health care because it enables quick and accurate data entry as well as proper sample identification. Some of its important advantages include:

- enhanced accuracy (eliminates error in manual entry)
- reduced effort (automation)
- facilitated decision (decision-making can be based on real time data)

## IV. Design and Implementation

### A. Use Cases

The figure below is the top-level use case diagram of the IMBB Biobank Specimen Sample Monitoring System.

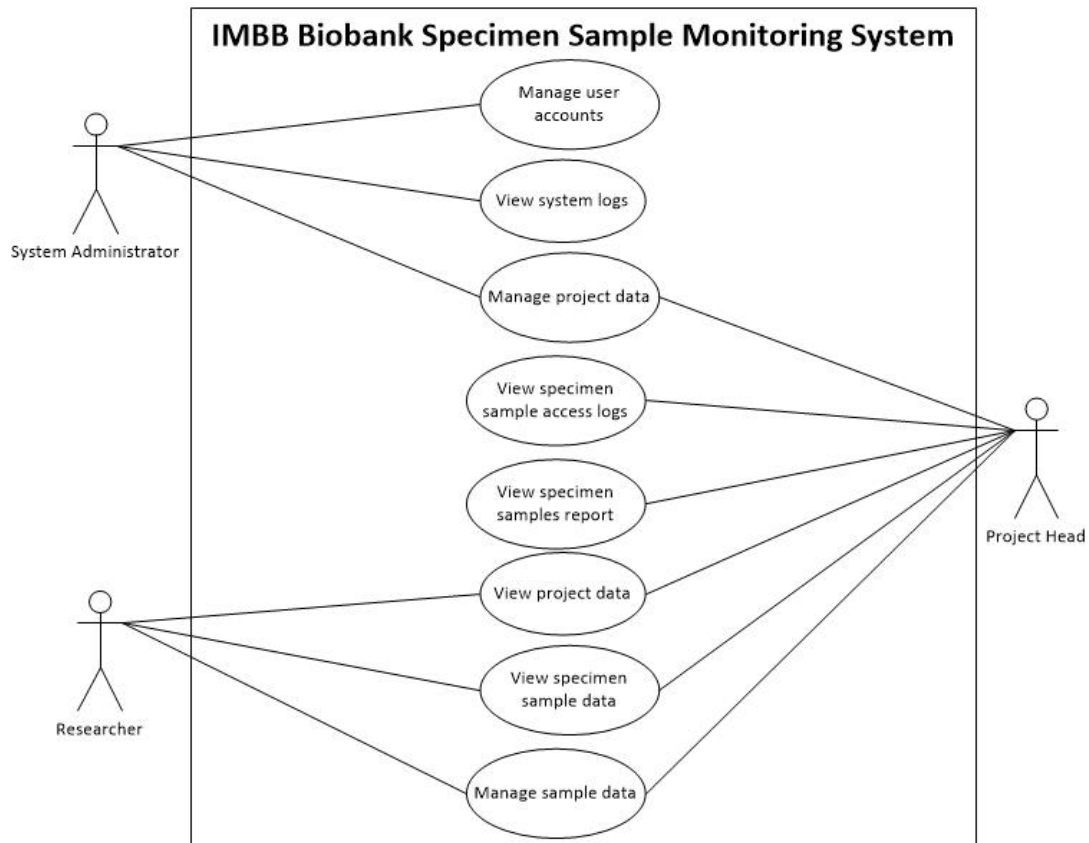


Figure 3: Top-level Use Case Diagram

The system is consist of three users: the system administrator, the project head, and the researcher.

The system administrator will manage the users, add projects, assign user to its project, and view system logs; the project head will update information about the project he/she handles, add sample and assign it to its corresponding location, view sample logs, view specimen sample reports and perform as a researcher; the researcher will update the specimen sample information.

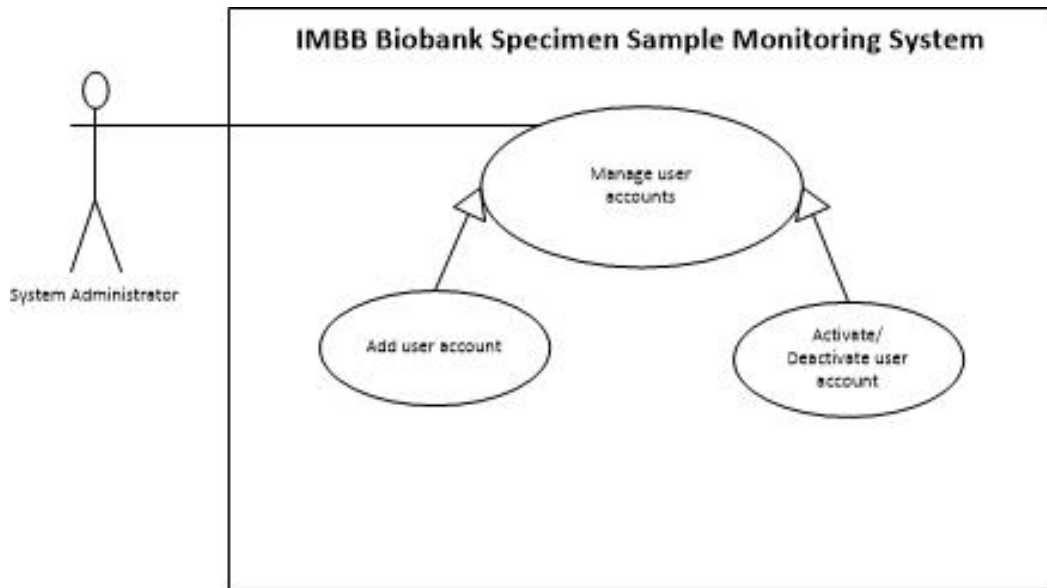


Figure 4: Manage User Accounts Use Case Diagram

Managing users requires adding, activating, and deactivating user accounts. These tasks are performed by the system administrator.

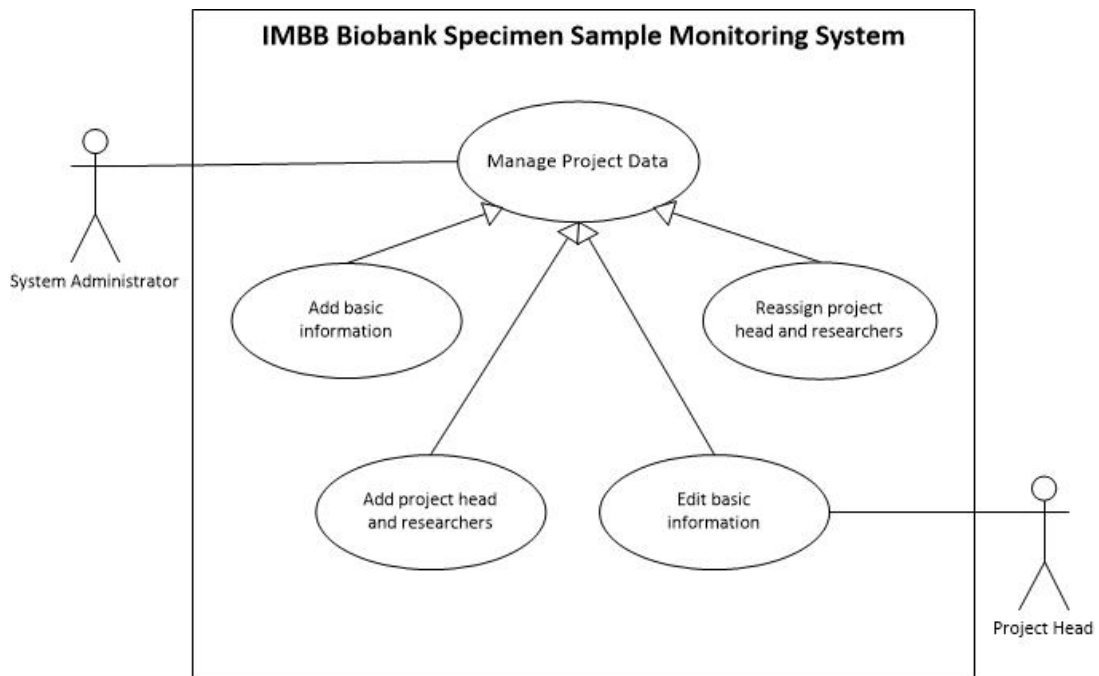


Figure 5: Manage Project Data Use Case Diagram

Managing project data requires adding and updating basic information and assigning project head and researchers of the project. This is performed by the

system administrator. On the other hand, the project head can only update the basic information of the project.

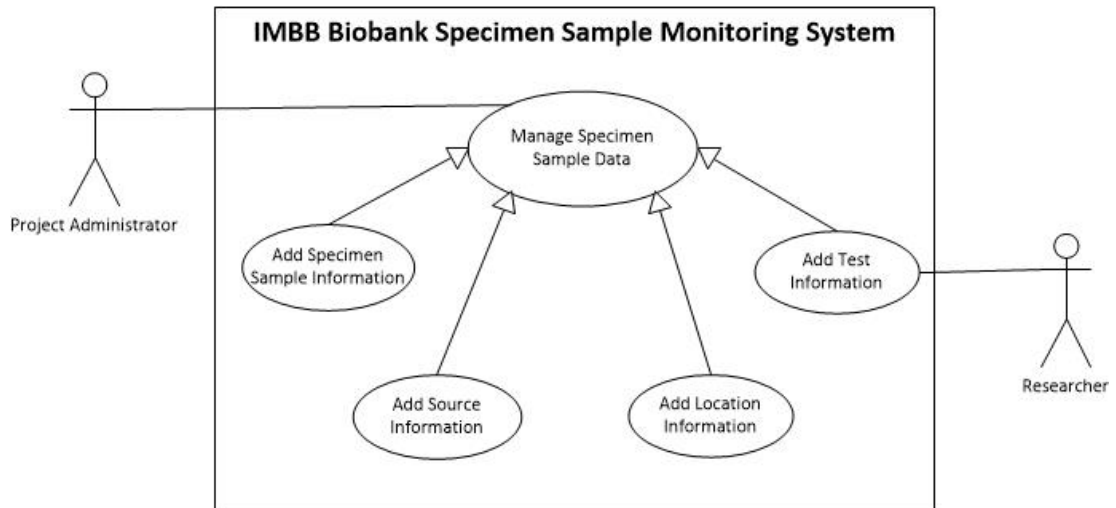


Figure 6: Manage Specimen Sample Data Use Case Diagram

Managing specimen sample requires adding specimen sample information, source information, location information, and test information. All this information can be updated by the project head. On the other hand, the researcher can only add test information of the specimen sample.

## B. Database Design

The figure below is the entity-relationship diagram of the IMBB Biobank Specimen Sample Monitoring System.

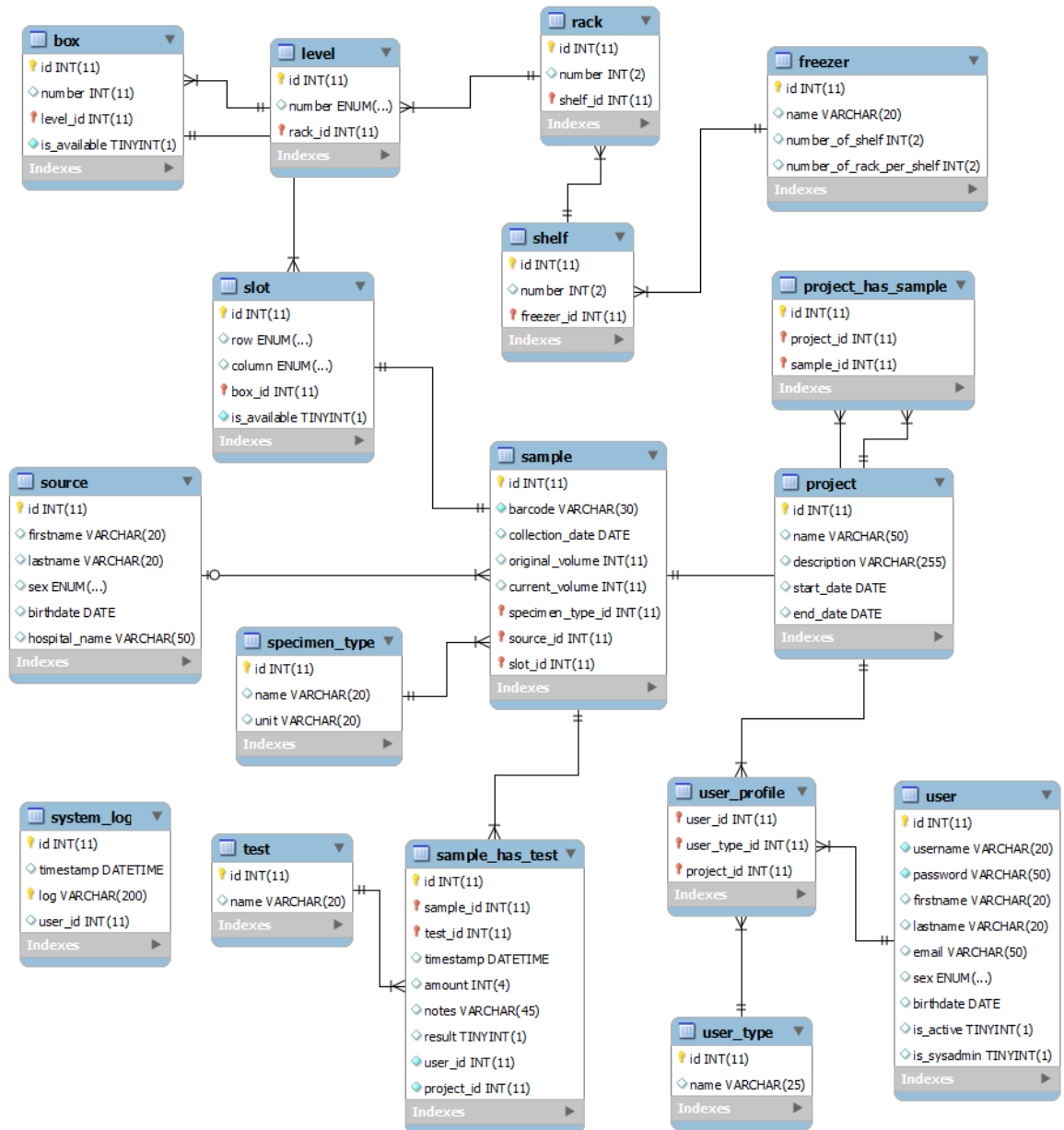


Figure 7: Entity-Relationship Diagram

The following tables describe the columns of each tables in the entity-relationship diagram (ERD) of the IMBB Biobank Specimen Sample Monitoring System.

Table 1: user table

Attribute	Data Type	Description
id	int(11)	unique id of the user
username	varchar(20)	username of the user
password	varchar(50)	password of the user
firstname	varchar(20)	first name of the user
lastname	varchar(20)	last name of the user
email	varchar(50)	email of the user
sex	enum('female', 'male')	sex of the user
birthdate	date	date of birth of the user
is_active	tinyint(1)	determines if the user is active
is_sysadmin	tinyint(1)	determines if the user is a system admin

Table 2: user\_type table

Attribute	Data Type	Description
id	int(11)	unique id of the user type
name	varchar(25)	name of the user type

Table 3: project table

Attribute	Data Type	Description
id	int(11)	unique id
name	varchar(50)	name of the project
description	varchar(255)	brief description of the project
start_date	date	date when the project will start
end_date	date	date when the project will end

Table 4: user\_profile table

Attribute	Data Type	Description
user_id	int(11)	unique id of the user
user_type_id	int(11)	unique id of the user type
project_id	int(11)	unique id of the project

Table 5: project\_has\_sample table

Attribute	Data Type	Description
id	int(11)	unique id of the user profile
project_id	int(11)	unique id of the project
sample_id	int(11)	unique id of the sample

Table 6: sample table

Attribute	Data Type	Description
id	int(11)	unique id of the sample
barcode	varchar(30)	barcode assigned to the sample
collection_date	date	collection date of the sample
original_volume	int(11)	original volume of the sample
current_volume	int(11)	current volume of the sample
specimen_type_id	int(11)	unique id of the specimen type
source_id	int(11)	unique id of the source
slot_id	int(11)	unique id of the slot where the sample is located

Table 7: source table

Attribute	Data Type	Description
id	int(11)	unique id of the source
first_name	varchar(20)	first name of the source
last_name	varchar(20)	last name of the source
sex	enum('female', 'male')	sex of the source
birthdate	date	date of birth of the source
hospital_name	varchar(50)	hospital name of the source

Table 8: specimen\_type table

Attribute	Data Type	Description
id	int(11)	unique id of the specimen type
name	varchar(20)	name of the specimen type
unit	varchar(20)	unit of measure of the specimen type

Table 9: test table

Attribute	Data Type	Description
id	int(11)	unique id of the test done with the sample
name	varchar(20)	name of the test done with the sample

Table 10: sample\_has\_test table

Attribute	Data Type	Description
id	int(11)	unique id of the particular test done with the sample
sample_id	int(11)	unique id of the sample
test_id	int(11)	unique id of the test done with the sample
timestamp	datetime	date and time the sample is use for testing
amount	int(4)	amount of sample used in the test
notes	varchar(45)	notes for the test
result	tinyint(1)	result of the test
user_id	int(11)	unique id of the user who obtained the sample
project_id	int(11)	unique id of the project where the sample is used

Table 11: slot table

Attribute	Data Type	Description
id	int(11)	unique id of the slot
row	enum('A','B','C','D','E','F','G','H','I')	row of the slot
column	enum('1','2','3','4','5','6','7','8','9')	column of the slot
box_id	int(11)	unique id of the box
is_available	tinyint(1)	determine if slot is available or not

Table 12: box table

Attribute	Data Type	Description
id	int(11)	unique id of the box
number	int(11)	number of the box
level_id	int(11)	unique id of the level containing the box
is_available	tinyint(1)	determine whether the box is still available or not

Table 13: level table

Attribute	Data Type	Description
id	int(11)	unique id of the rack level
number	int(11)	number of the rack level
rack_id	int(11)	unique id of the rack containing the level

Table 14: rack table

Attribute	Data Type	Description
id	int(11)	unique id of the rack
number	int(11)	number of the rack
shelf_id	int(11)	unique id of the shelf containing the rack

Table 15: shelf table

Attribute	Data Type	Description
id	int(11)	unique id of the shelf
number	int(11)	number of the shelf
freezer_id	int(11)	unique id of the freezer containing the shelf



Table 16: freezer table

Attribute	Data Type	Description
id	int(11)	unique id of the freezer
name	varchar(20)	name of the freezer
number_of_shelf	int(2)	number of shelves that the freezer contains
number_of_rack_shelf	int(2)	number of racks of each shelves of the freezer

Table 17: system\_log table

Attribute	Data Type	Description
id	int(11)	unique id of the system log
timestamp	datetime	date and time of the system log
log	varchar(200)	event of the system log
user_id	int(11)	unique id of the user who made the system log

## C. System Architecture

The specimen sample monitoring system has been implemented in PHP using Codeigniter as its framework. Codeigniter makes use of the Model-View-Controller setup. The system view uses HTML, Bootstrap, CSS, jQuery, and javascript to render the user interface which is visible and used to interact with the user. The system model uses functions that handle queries to MySQL database. The system controller defines the web-based application behavior. The figure<sup>12</sup> below shows the architecture of the system.

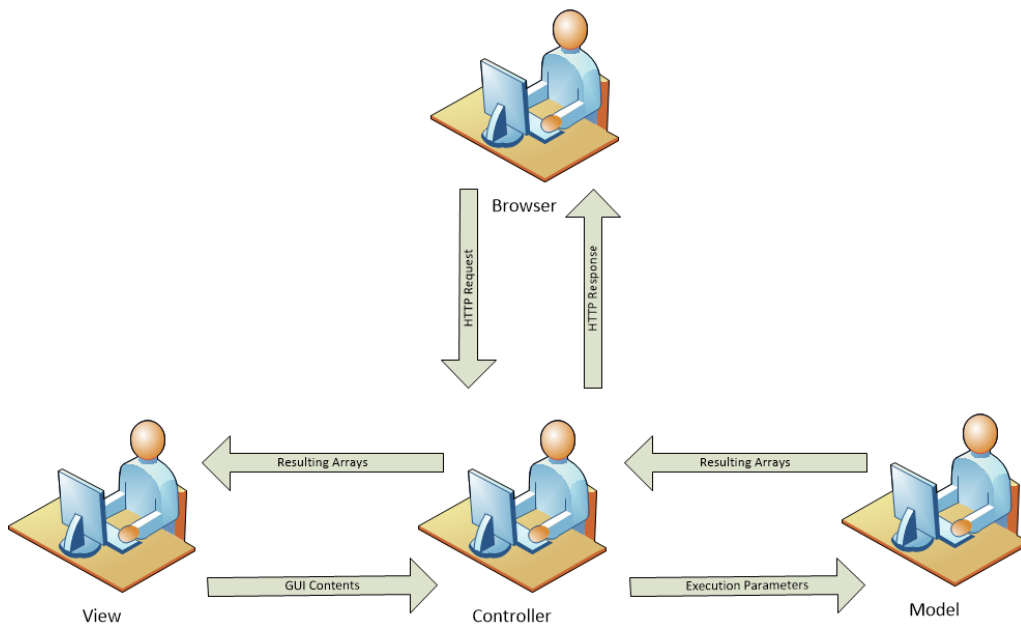


Figure 8: System Architecture

## D. Technical Architecture

The minimum requirements for the server machine include:

- PHP Server (Apache 2.2.22)
- MySQL 5.1.41
- 1GB or more of free space.

<sup>12</sup><https://psychopathya.files.wordpress.com/2010/02/mvc.jpg>

- 2.4 MHz single core processor
- 512MB RAM

The minimum requirements for the client include:

- 1GB RAM
- Consistent Internet connection
- PDF Viewer
- 1D Barcode Scanner

## V. Results

### 1. Login Page

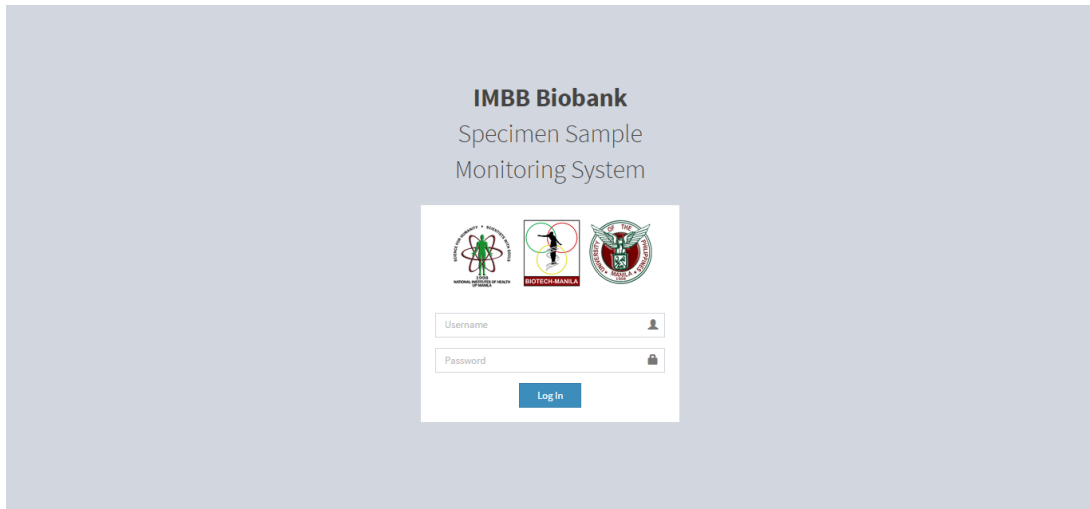


Figure 9: Login Page

Figure 9 shows the Login Page of the system. The page requires the Username and Password of the user for him/her to start his/her session.

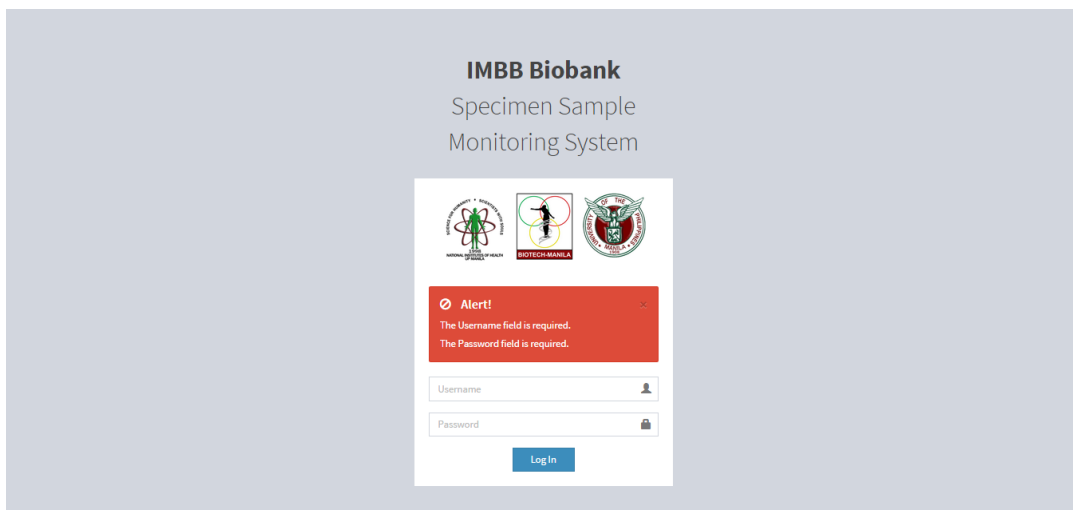


Figure 10: Login Page with warning message

A warning sign as shown in figure 10 will be displayed if the user clicked the LOGIN button without entering his/her Username and Password.

## 2. Home Page

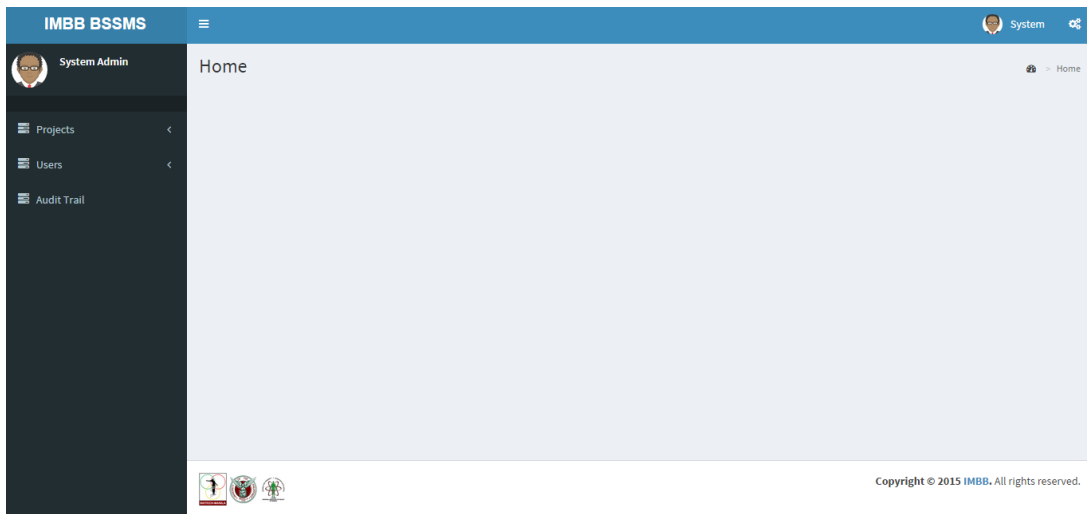


Figure 11: Home Page of System Administrator

Figure 11 shows the Home Page or Dashboard of a system administrator after he/she successfully logged in.

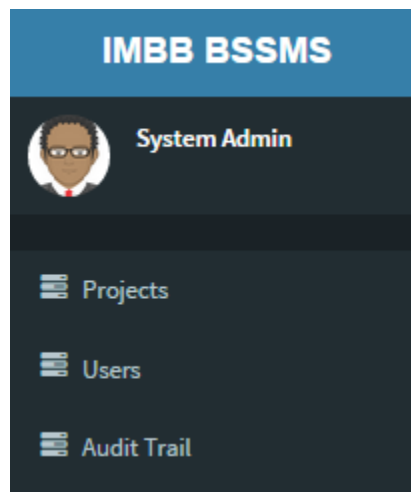


Figure 12: Side-bar Menu Options for System Administrator

On the left side of the page, a sidebar menu is available with options including: PROJECTS, USERS, and AUDIT TRAIL. These options shown in figure 12 enable the system administrator to navigate and perform his/her tasks.

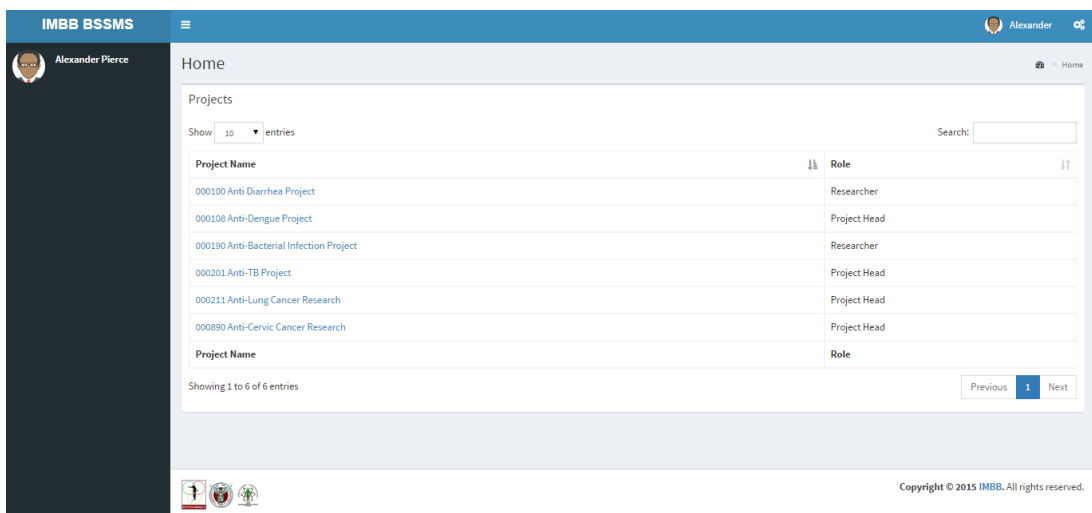


Figure 13: Home Page of Project Head and Researcher

Figure 13 shows the Home Page or Dashboard of a project head and researcher after he/she successfully logged in. The page consists of a list of projects that the user is currently assigned on and his/her role on each projects. After he/she chose a particular project by clicking the Project Name, a sidebar menu on the left side of the page will be available with options depending on his/her role in the chosen project.

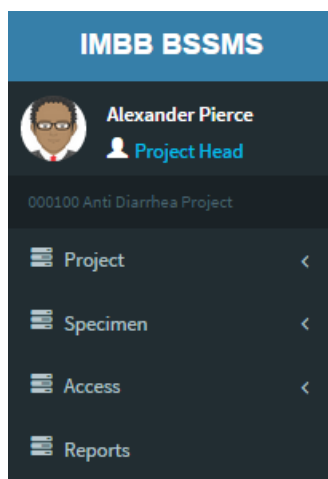


Figure 14: Side-bar Menu Options for Project Head

For a project head, the options include PROJECTS, SPECIMEN, ACCESS, and REPORTS. On the other hand, the options for a researcher include PROJECTS, SPECIMEN, and ACCESS. These options shown in figure 14 and 15 enable the user to navigate and perform his/her tasks.

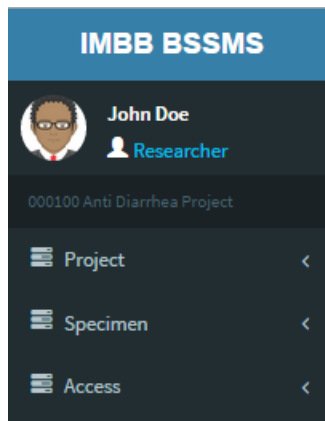


Figure 15: Side-bar Menu Options for Researcher

### 3. New Project Page

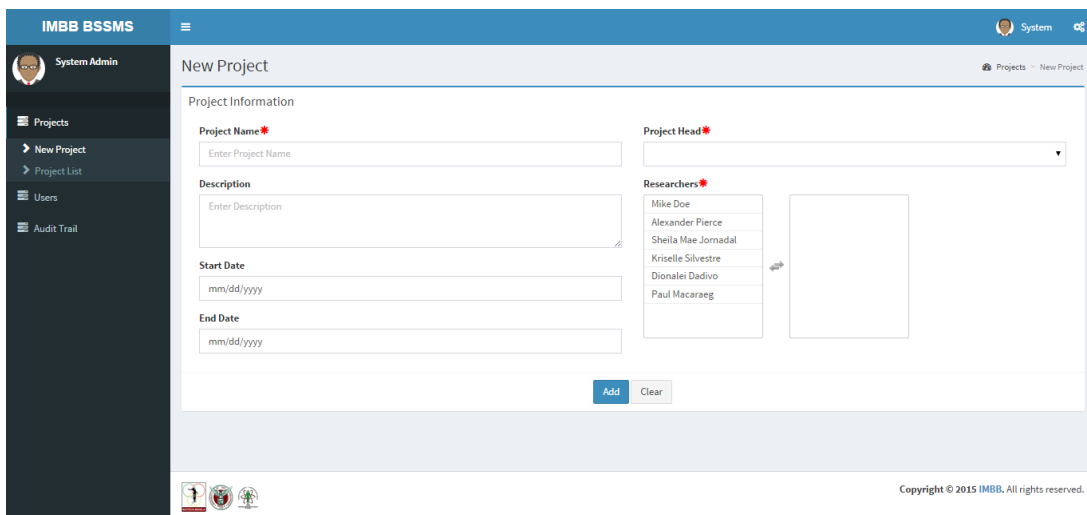


Figure 16: New Project Page

Figure 16 shows the New Project Page under the PROJECTS option. This page is only available to the system administrator because he/she is the one responsible in adding new projects. The required fields are those with red asterisk beside them. These fields include Project Name, Project Head, and Researchers.

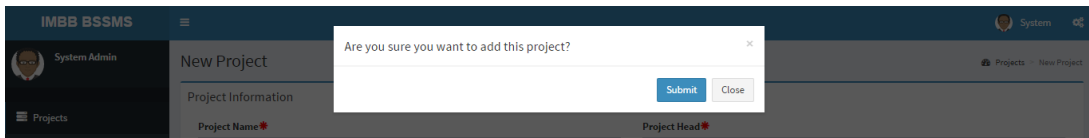


Figure 17: New Project Confirmation Modal

After filling out the project data and clicking the ADD button, a confirmation modal will be displayed as shown in figure 17.



Figure 18: New Project Success Message

After clicking the SUBMIT button, a message will be displayed as shown in figure 18 if the system administrator has successfully added a new project.

#### 4. Project List Page

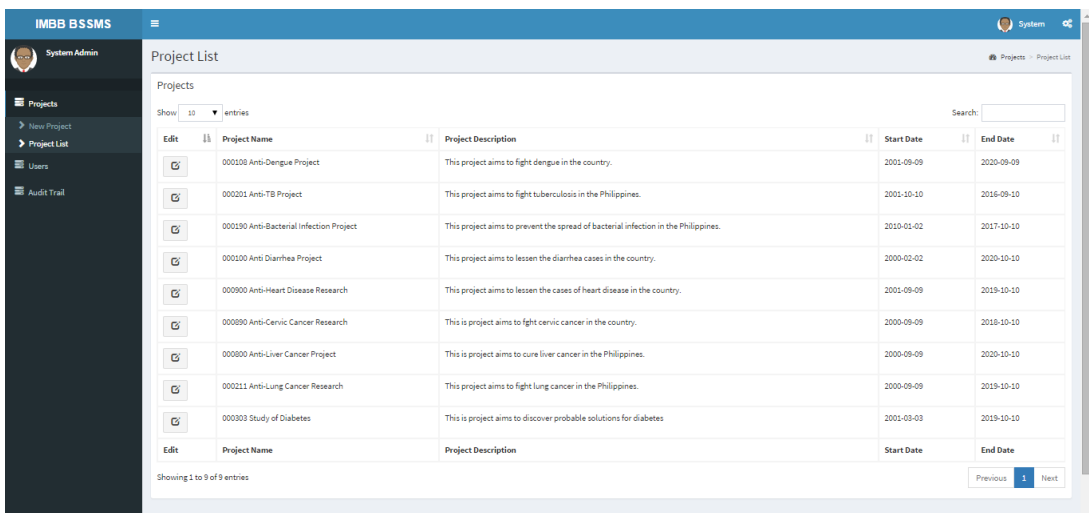


Figure 19: Project List Page

Figure 19 shows the Project List Page under the PROJECTS option. The page contains a tabular list of all the existing projects and only available for



system administrator. The table can be sorted by clicking the table header of the column desired to be sorted by.

## 5. Edit Project Page

The screenshot shows the 'Edit Project' page in the IMBB BSSMS system. The page title is 'Edit Project'. The form contains the following fields and sections:

- Project Name:** 000100 Anti Diarrhea Project
- Description:** This project aims to fight Diarrhea in the Philippines.
- Start Date:** 10/10/2000
- End Date:** 10/10/2019
- Project Head:** Alexander Pierce
- Choose researcher(s) to REMOVE:** John Doe
- Choose researcher(s) to ADD:** John Doe, Alexander Pierce, Shella Jornadal

At the bottom of the form, there are 'Update' and 'Clear' buttons. The page footer includes the text 'Copyright © 2015 IMBB. All rights reserved.'

Figure 20: Edit Project Page

An existing project can be updated by clicking the edit button beside the project that the system administrator wants to edit in the project list shown in figure 19. Then, the form shown in figure 20 will be displayed to enable him/her to change the information of the project.

The screenshot shows a confirmation modal dialog box overlaid on the 'Edit Project' page. The modal contains the text: 'Are you sure you want to update the existing project?'. Below the text are two buttons: 'Update Project' and 'Close'.

Figure 21: Edit Project Confirmation Modal

After filling out the project data and clicking the UPDATE button, a confirmation modal will be displayed as shown in figure 21.



Figure 22: Edit Project Success Message

After clicking the UPDATE PROJECT button, a message will be displayed as shown in figure 22 if the system administrator has successfully updated an existing project.

## 6. About Project Page

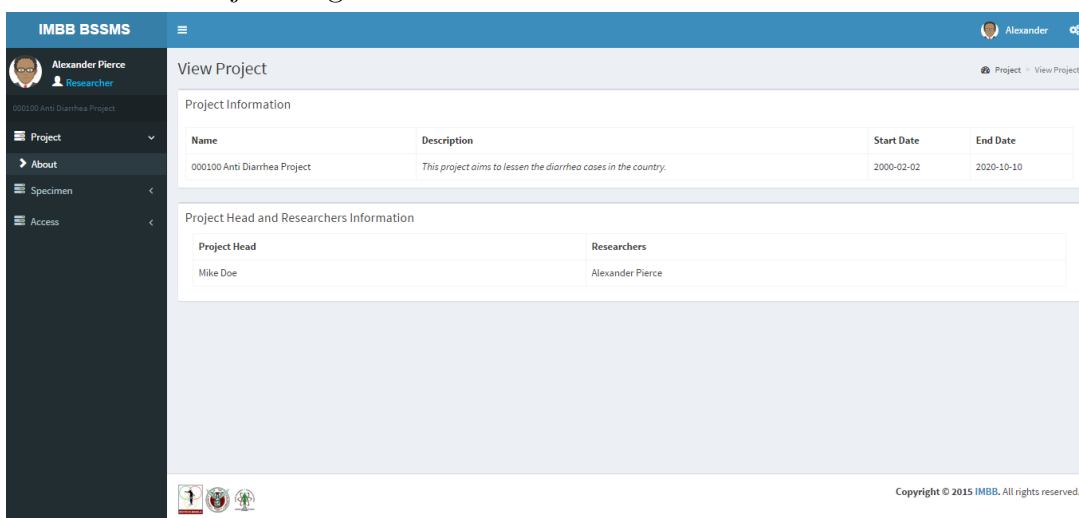


Figure 23: About Project Page

After choosing a project, the project head and researcher will be redirected to a page containing the information about the project as shown in figure 23.

## 7. Update Project Page

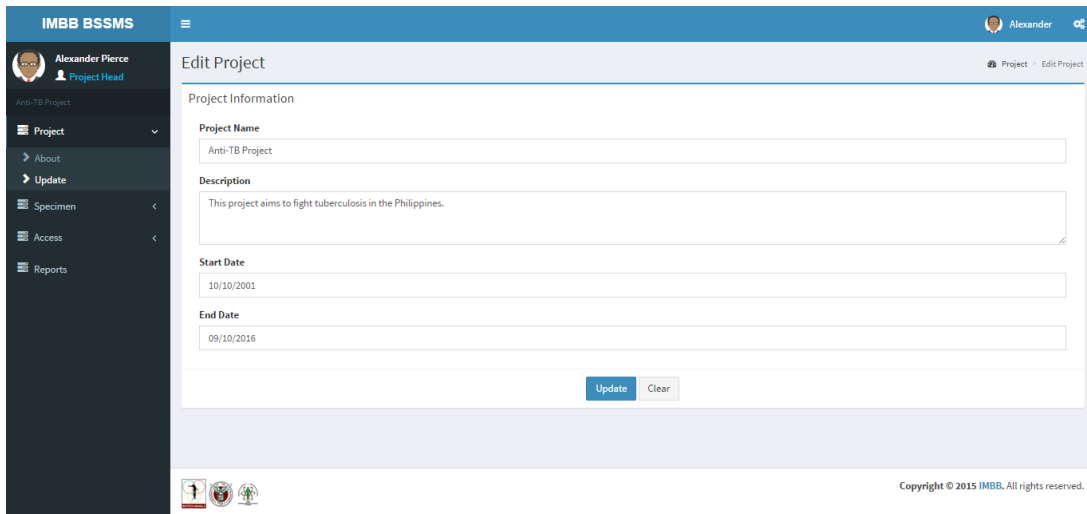


Figure 24: Update Project Page

Figure 24 shows the Update Page under the PROJECT option. This page is only accessible by the project head.

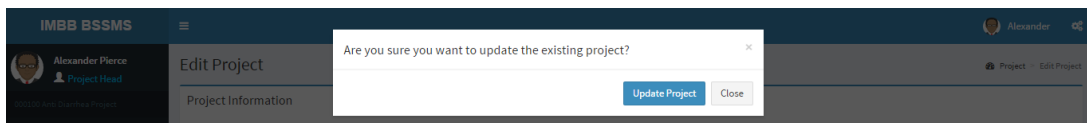


Figure 25: Update Project Confirmation Modal

After filling out the project data and clicking the Update button, a confirmation modal will be displayed as shown in figure 25.



Figure 26: Update Project Success Message

After clicking the UPDATE PROJECT button, a message will be displayed as shown in figure 26 if the project head has successfully updated the current project.

## 8. New Specimen Sample Page

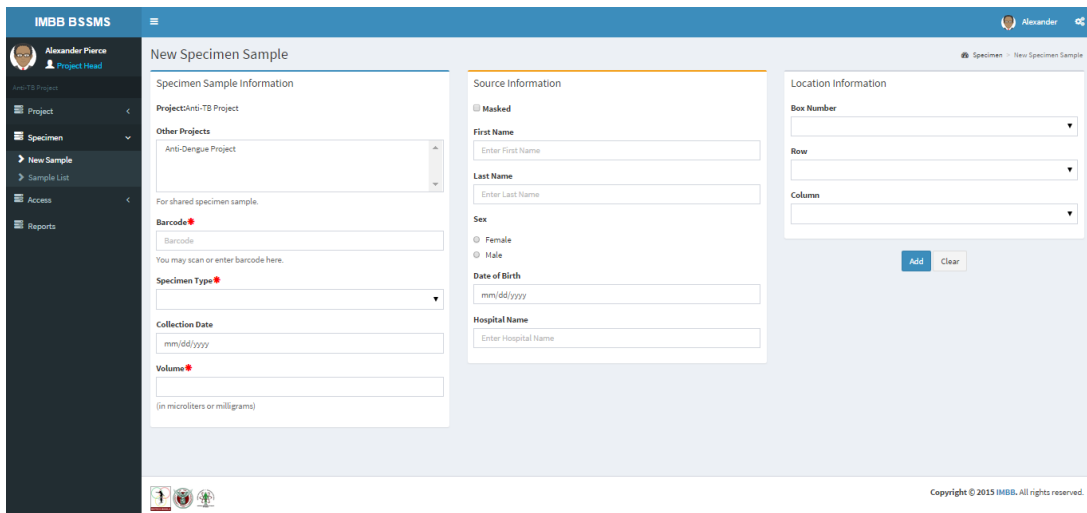


Figure 27: New Specimen Sample Page

The task of adding new specimen sample is assigned to the project head. To do this, he/she needs to fill out information about the specimen sample, its source, and the location in which the specimen sample will be placed as shown in figure 27.

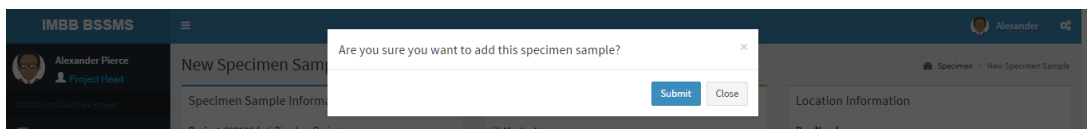


Figure 28: New Specimen Sample Confirmation Modal

After filling out the specimen sample data and clicking the ADD button, a confirmation modal will be displayed as shown in figure 28.

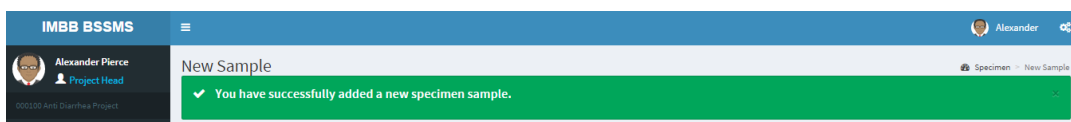


Figure 29: New Specimen Sample Success Message

After clicking the SUBMIT button, a message will be displayed as shown in figure 29 if the project head has successfully added a new specimen sample.

## 9. Specimen Sample List Page

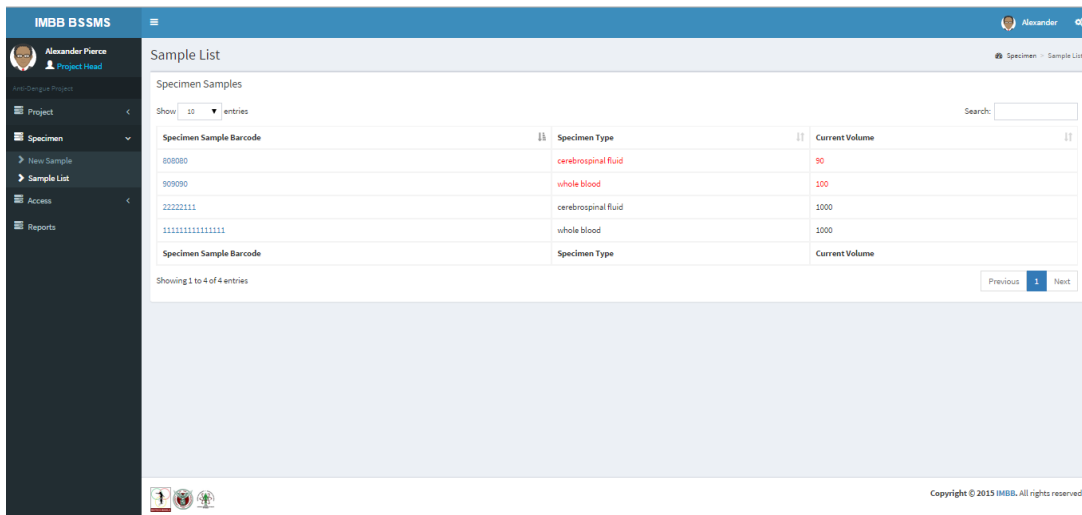


Figure 30: Specimen Sample List Page

Figure 30 shows the Specimen Sample List Page under the SPECIMEN option. The page contains a tabular list of all the existing specimen samples of the current project. The table can be sorted by clicking the table header of the column desired to be sorted by. If the user is a project head, the EDIT button beside the specimen sample will be visible.

## 10. Edit Specimen Sample Page

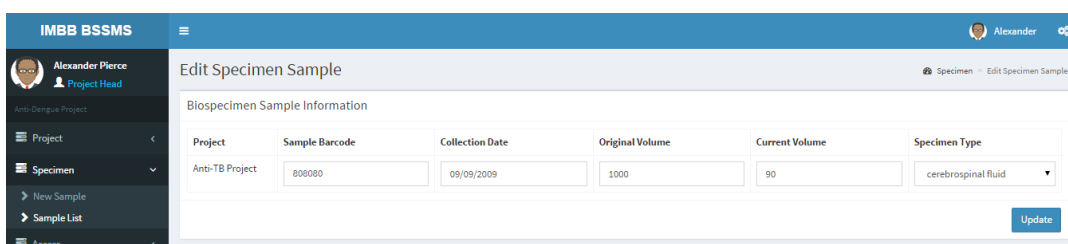


Figure 31: Edit Page - Specimen Sample Information

Figure 31 shows the editable form to update the specimen sample information.

tion, all the fields can be change except the project in which the specimen sample is shared.

Source Information

First Name	Last Name	Sex	Date of Birth	Hospital Name
<input type="text"/>	<input type="text"/>	<input type="radio"/> Female <input type="radio"/> Male	<input type="text" value="mm/dd/yyyy"/>	<input type="text" value="Philippine General Hospital"/>

Figure 32: Edit Page - Source Information

On the other hand, figure 32 shows the form to update the information of the source from where the specimen sample is obtained.

Test Information

Test	Amount	Result	Notes
PCR	100	positive	<input type="text"/>
PCR	10	<input type="text"/>	<input type="text"/>
LAMP	700	<input type="text"/>	<input type="text"/>
Microscopy	100	<input type="text"/>	<input type="text"/>

Figure 33: Edit Page - Test Information

Figure 33 shows the form to update the information about the tests done on

Location Information

Freezer	Shelf	Rack	Rack Level	Box	Row	Column
Ultra Low Freezer	1	1	1	<input type="text" value="1"/>	<input type="text" value="B"/>	<input type="text" value="1"/>

Figure 34: Edit Page - Location Information

On the other hand, figure 34 shows the form to update the location of the sample in a freezer. The only fields that can be updated are the box number, row, and column.

The four parts that can be updated in the specimen sample information as shown in figure 31, 32, 32, and 34 are all available to the project head while the researcher can only update the test information part.

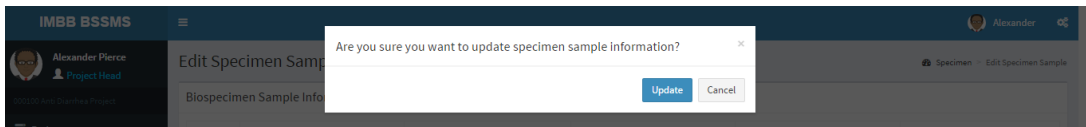


Figure 35: Edit Specimen Sample Confirmation Modal

After filling out the specimen sample data and clicking the Update button, a confirmation modal will be displayed as shown in figure 35.

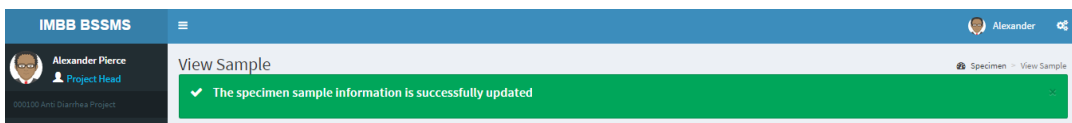


Figure 36: Edit Specimen Sample Success Message

After clicking the UPDATE button, a message will be displayed as shown in figure 36 if the user has successfully updated an existing specimen sample.

## 11. Specimen Sample Access Page

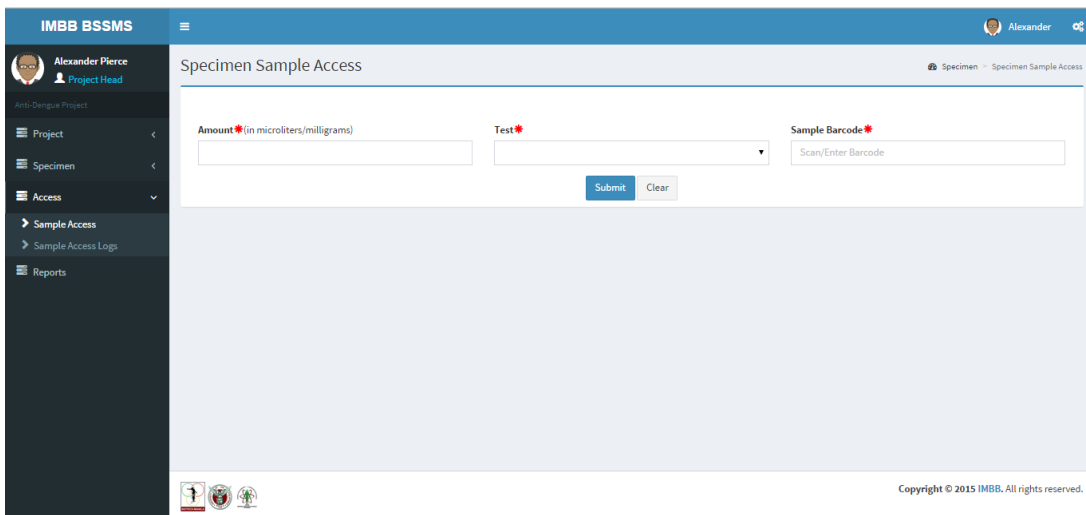


Figure 37: Specimen Sample Access Page

Figure 37 shows the page where the project head and researcher will record their specimen sample access. All the fields in the form are required to be fill out, otherwise, the access will not be recorded.

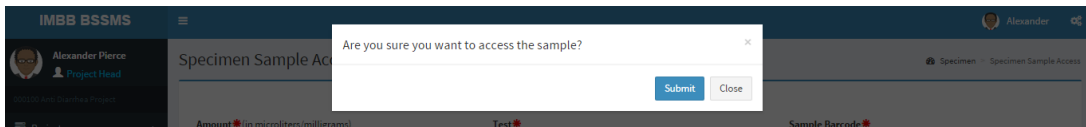


Figure 38: Specimen Sample Access Confirmation Modal

After filling out the specimen sample access data and clicking the SUBMIT button, a confirmation modal will be displayed as shown in figure 38.

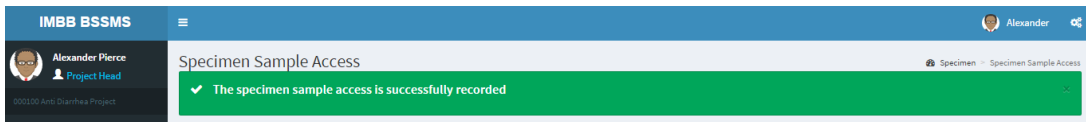


Figure 39: Specimen Sample Access Success Message

After clicking the SUBMIT button, a message will be displayed as shown in figure 39 if the user has successfully accessed a specimen sample.

## 12. Specimen Sample Access Logs Page

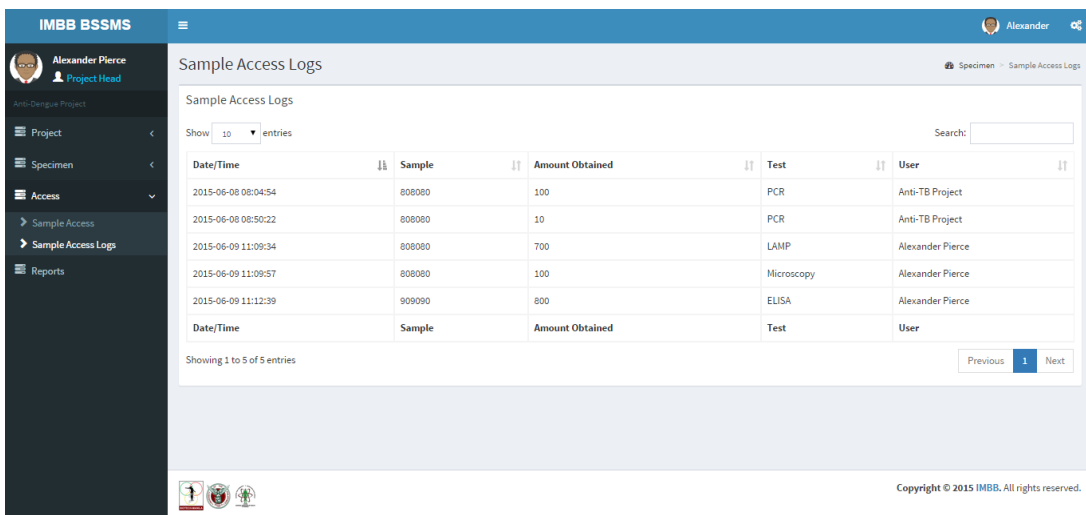


Figure 40: Specimen Sample Access Logs Page

As a project head, he/she will be able to view the list of logs of the specimen sample access in the project that he/she handles. As shown in figure 40,



the logs include the timestamp, amount and the researcher who access the specimen sample.

### 13. Specimen Sample Reports Page

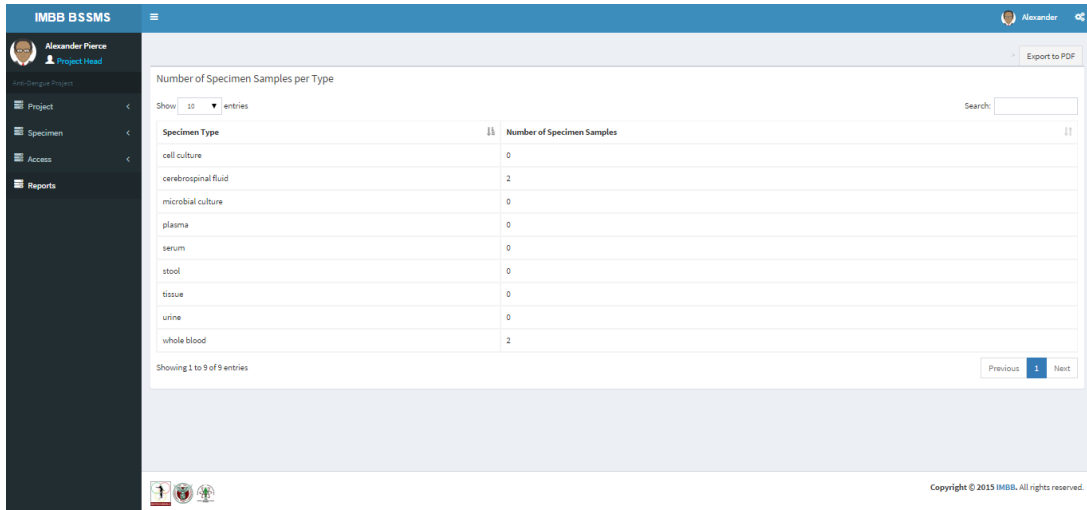


Figure 41: Specimen Sample Reports Page

Figure 41 shows a report about the specimen sample of a project. This page is only available to the project head. He/she can also export the report in portable document format (pdf) by clicking the export button on the upper right side of the page.

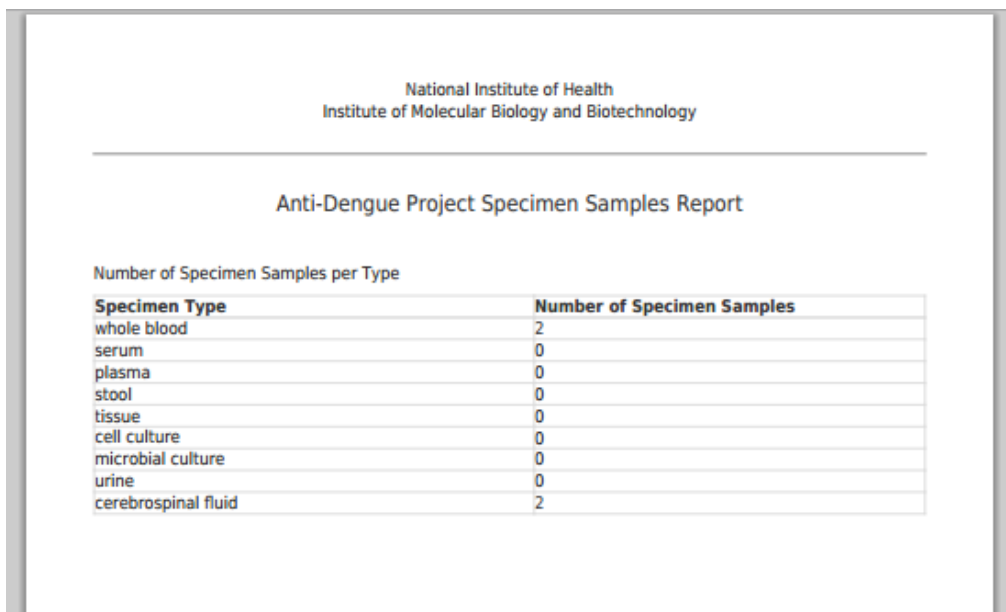


Figure 42: Specimen Sample Report in PDF format

An example of a specimen sample report in pdf format is shown in figure 42.

## 14. New User Page

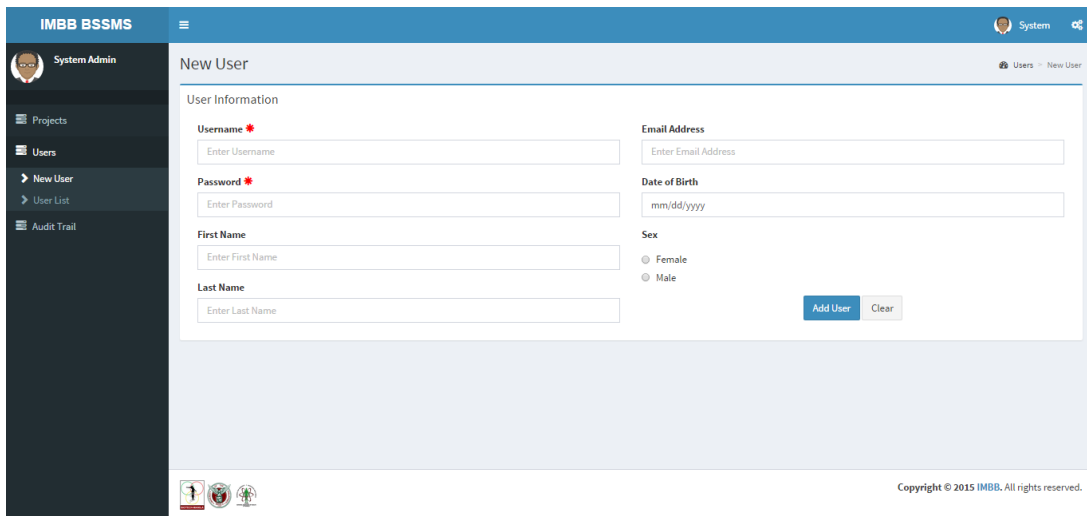


Figure 43: New User Page

Figure 43 shows the New User Page which is only available to the system administrator.

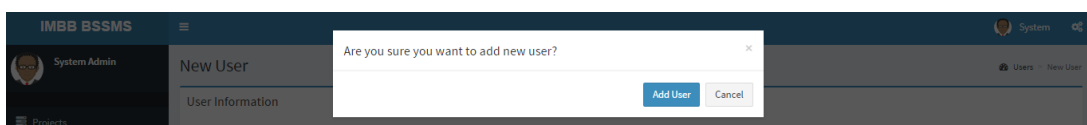


Figure 44: New User Confirmation Modal

After filling out the specimen sample access data and clicking the ADD button, a confirmation modal will be displayed as shown in figure 44.

After clicking the ADD USER button, a message will be displayed as shown in figure 45 if the system administrator has successfully added the new user.



Figure 45: New User Success Message

## 15. User List Page

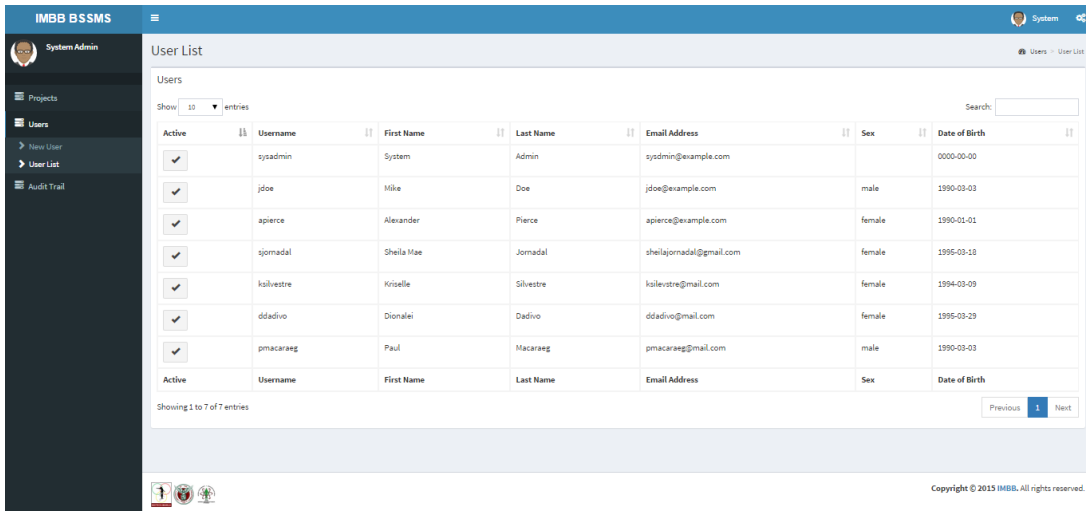


Figure 46: User List Page

The list of users can be seen by the system administrator by viewing the page shown in figure 46. The list of users are tabulated and the table can be sorted by clicking the header of the column.

## 16. Activate/Deactivate User

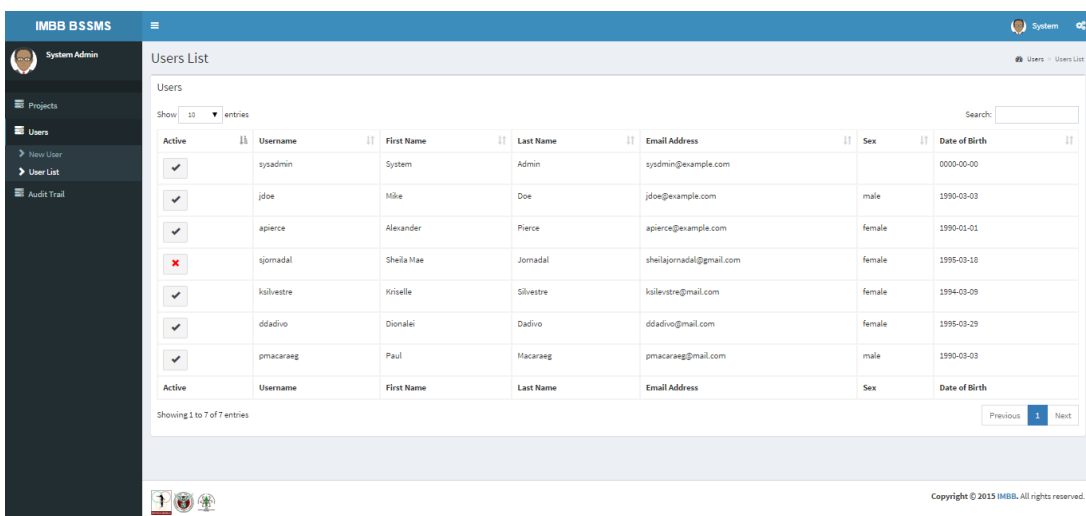


Figure 47: User List Page with deactivated user

A user which has an active status has a check button beside his/her user account in the users list. Otherwise, he/she is deactivated. To activate a user, the system administrator will simply click the button with an 'x' beside the user account that he/she wants to activate. On the other hand, if he/she wants to deactivate a user, the system administrator will simply click the button with a check icon beside the user that he/she wants to activate. The buttons are in the rightmost side of the table shown in figure 47.

## 17. Audit Trail Page

Timestamp	User	Log
2015-06-09 11:20:23	System Admin	deactivated user (sjomadal)
2015-06-09 10:49:50	System Admin	updated user (sjomadal)
2015-06-09 10:48:10	System Admin	activated user (sjomadal)
2015-06-09 10:47:46	System Admin	deactivated user (sjomadal)
2015-06-09 10:47:45	System Admin	activated user (sjomadal)
2015-06-09 10:47:40	System Admin	deactivated user (sjomadal)
2015-06-09 10:36:06	System Admin	activated user (sjomadal)
2015-06-09 10:31:10	System Admin	activated user (sjomadal)
2015-06-09 10:31:07	System Admin	deactivated user (sjomadal)
2015-06-09 09:42:10	Alexander Pierce	updated specimen sample (909090)
Timestamp	User	Log

Showing 1 to 10 of 41 entries

Previous 1 2 3 4 5 Next

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Figure 48: Audit Trail Page

A list of system logs can be viewed by the system administrator as shown in figure 48. The logs include the timestamp, the user that commits the event, and the description of the log or event.

## 18. User Profile Page

The screenshot shows the IMBB BSSMS user profile page. The header includes the IMBB BSSMS logo and the user's name, Alexander Pierce. The main content area is titled "Profile" and contains a "User Profile" section. This section displays the following information:

<b>Username:</b>	apierce
<b>First Name:</b>	Alexander
<b>Last Name:</b>	Pierce
<b>Email Address:</b>	apierce@example.com
<b>Date of Birth:</b>	1990-01-01
<b>Sex:</b>	male

An "Edit" button is located at the bottom right of the profile information. The footer of the page includes a copyright notice: "Copyright © 2015 IMBB. All rights reserved."

Figure 49: User Profile Page

Figure 49 shows the user profile page of the system. An EDIT button is available to enable the user to edit his/her own user profile. After he/she clicked the edit button, a form shown in figure 50 will be displayed.

## 19. Edit User Profile Page

The screenshot shows the IMBB BSSMS edit user profile page. The header includes the IMBB BSSMS logo and the user's name, Alexander Pierce. The main content area is titled "Profile" and contains a "User Information" section. This section displays the following form fields:

<b>Username</b>	apierce	<b>Email Address</b>	apierce@example.com
<b>Current Password</b>	Enter Current Password	<b>Date of Birth</b>	01/01/1990
<b>New Password</b>	Enter New Password	<b>Sex</b>	<input type="radio"/> Female <input checked="" type="radio"/> Male
<b>First Name</b>	Alexander	<input type="button" value="Update"/> <input type="button" value="Clear"/>	
<b>Last Name</b>	Pierce		

The footer of the page includes a copyright notice: "Copyright © 2015 IMBB. All rights reserved."

Figure 50: Edit User Profile Page

To edit user profile, the user must fill-out the current password field. Otherwise, his/her modifications will not be saved.

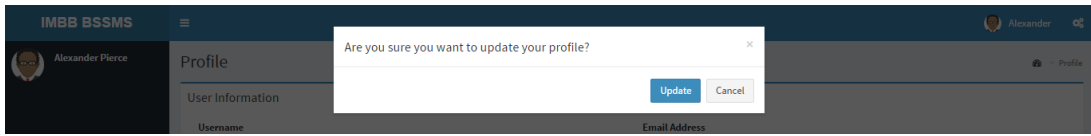


Figure 51: Edit User Profile Confirmation Modal

After filling out the user data and clicking the UPDATE button, a confirmation modal will be displayed as shown in figure 51.



Figure 52: Edit User Profile Success Message

After clicking the UPDATE button, a message will be displayed as shown in figure 52 if the user has successfully updated his/her user profile.

## 20. Sign out

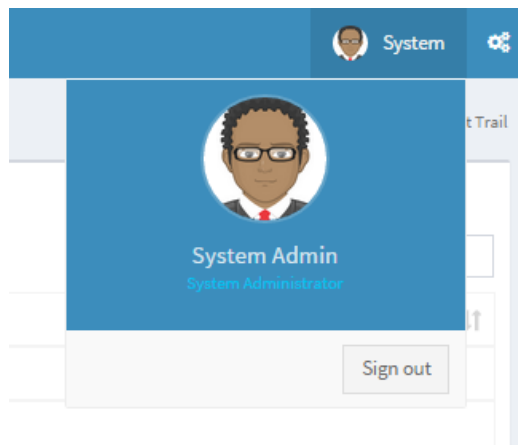


Figure 53: Sign Out

The user can click the SIGN OUT button shown in figure 51 if he/she wants to sign out of the system.

## VI. Discussions

The IMBB Biobank Specimen Sample Monitoring System is a web-based application system that provides a convenient and standard way to monitor and track all the specimen samples within the institute. It uses different technologies such as frameworks and libraries to ensure that the objectives of the study will be achieved.

The system was designed to have 3 types of users namely: system administrator, project heads, and researchers. The role of the system administrator is to manage the user accounts and projects. Managing the user accounts includes adding, activating and deactivating user accounts. In terms of managing the projects, the system administrator is the one responsible in adding new project and assigning its corresponding project head and researchers.

On the other hand, the role of project heads is to update the project information, manage specimen samples and view specimen sample access logs and reports. Managing the specimen samples includes adding and updating their basic information, source information, test information, and location information. All the basic information can be edited except for the project/s in which the specimen sample is shared. The project heads can also view the specimen sample access logs recorded in the system by the researchers of the projects handling each specimen samples. He/she can also view and generate reports on the specimen samples for each of his/her research projects. These report is downloadable in pdf format.

Moreover, the role of the researchers is to record specimen sample accesses and update test information of each specimen samples that they handle. In recording the specimen sample access, the data that they are required to supply are the amount or portion of the specimen sample, the test that they will perform on the specimen sample, and importantly, the specimen sample barcode which serves as the unique identifier of each specimen samples. On the other hand, updating the test information of the specimen samples include adding the result and notes of each tests performed on them. The result can only be positive or negative.

In terms of technologies, Codeigniter<sup>13</sup> is used as the main framework of the monitoring system. Although it is quite difficult to use, this framework enables the developer to have a flexible system development. The helper libraries provided by the Codeigniter framework such as form, date and the others made the development of the system to be efficient and more effective.

Bootstrap<sup>14</sup> is used as the front-end framework of the system. It manages HTML, CSS, javascript, and jQuery files well. It also provides a user-friendly user interface or views for the system's users.

MySQL<sup>15</sup> is used as the database of the monitoring system. For the record, designing the database of the system became quite difficult and took a long time span in doing so. But, after some times of further analysis, a good database design is successfully obtained.

The system uses mPDF<sup>16</sup>, a PHP class, to generate PDF files of the specimen sample reports of each research projects.

The system also supports barcode scanning to provide an easy way of recording and logging information about the specimen samples. But in case of the inability to provide a barcode scanner, manual input can also be an alternative procedure.

---

<sup>13</sup><http://www.codeigniter.com/>

<sup>14</sup><http://getbootstrap.com/>

<sup>15</sup><https://www.mysql.com/>

<sup>16</sup><http://www.mpdf1.com/mpdf/index.php>



## VII. Conclusions

The IMBB Biobank Specimen Sample Monitoring System is a web-based application tool which uses different frameworks and libraries that are necessary to successfully monitor and track the specimen samples used by the researchers of the institute. Such technologies produce an output that serves as a standard way for the project head and researchers to accomplish their tasks, specifically those that are related in handling specimen samples.

Particularly, the developed system provides a way for the project heads to monitor all the specimen sample accesses of every researchers working under the research project that they handle as well as the specimen sample accesses of other projects, provided that the specimen sample is shared with them. The system also caters a way for the project heads and researchers to be updated on the current amount or volume of each specimen samples that are dedicated for the research project that they are working on. Additionally, the output also enable the project heads and researchers to locate a particular specimen sample in a freezer-rack-box storage hierarchy. This way, the time-consuming searches inside the freezer may be lessen or eliminated. Moreover, the system also produces updated report about the specimen sample for each research projects which can be used by the institute for their documentation and analysis procedures.

All the functionalities mentioned previously are all contained in the developed system so that a standard way of monitoring and tracking specimen samples in IMBB will be successfully achieved.

## VIII. Recommendations

The IMBB Biobank Specimen Sample Monitoring System is a web-based application tool that addressed the problems faced by the researchers in IMBB specifically the monitoring of specimen sample amount, access, and location. However, there is always a room for improvement.

The system can be further enhanced by adding some additional and needed functionalities like sending emails or SMS to the person-in-charge whenever the amount of specific specimen sample approach its threshold or limiting amount. The developer can use libraries to add these capabilities.

It is also recommended for future developers to further automate the generation of specimen sample reports per project by adding graphs and charts which can be generated with the use of libraries like Highcharts JS. This additional functionality will be beneficial for the institute's documentation and trends analysis.

A query builder is also suggested so that the system will be more flexible in providing the data needed by the users. This will be helpful especially for the researchers if they need to know and obtain other several information about the specimen samples.

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# X. Appendix

## A. Source Code

Listing 1: Authenticate.php

```
1 <?php
2 class Authenticate extends CI_Controller
3 {
4     function __construct()
5     {
6         parent::__construct();
7         $this->load->model('AuthenticateModel', '',
8             TRUE);
9         $this->load->model('UserModel', '', TRUE);
10    }
11    function index()
12    {
13        $this->load->helper(array('form'));
14        $data['pageTitle'] = "Login Page";
15        $this->load->view('authenticate/login',
16            $data);
17    }
18    function login()
19    {
20        $username = $this->input->post('username');
21        $password = $this->input->post('password');
22
23        if( $this->AuthenticateModel->validate()
24            && $this->UserModel->isRegisteredUser(
25                $username, $password ) )
26        {
27            if( $this->AuthenticateModel->loginUser(
28                $username, $password ) )
29            {
30                redirect('dashboard');
31            }
32            else
33            {
34                $this->load->view('authenticate/login'
35                    );
36            }
37        }
38        else
39        {
40            $this->load->view('authenticate/login');
41        }
42    }
43    function logout()
44    {
45        $this->AuthenticateModel->logoutuser();
46        redirect('/');
47    }
48 }
```

Listing 2: AuthenticateModel.php

```
1 <?php
2 class AuthenticateModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7     }
8     function validate()
9     {
10        $this->load->library('form_validation');
11        $this->form_validation->set_rules('
12            username', 'Username', 'trim|required|xss_clean');
13        $this->form_validation->set_rules('
14            password', 'Password', 'trim|required|xss_clean');
15        return $this->form_validation->run();
16    }
17    function loginUser( $username, $password )
18    {
19        $query = $this->db
20            ->where('username', $username )
21            ->where('password', md5( $password ) )
22            ->where('is_active', 1 )
23            ->from('user' )
24            ->get();
25
26        if( $query->num_rows() > 0 )
27        {
28            $sessionArray = array(
29                'username' => $query->row()->username,
30                'id' => $query->row()->id,
31                'firstname' => $query->row()->
32                    firstname,
33                'fullname' => $query->row()->firstname
34                    . ' ' . $query->row()->lastname,
35                'is_sysadmin' => $query->row()->
36                    is_sysadmin
37            );
38            $this->session->set_userdata('logged.in'
39                , $sessionArray);
40            return true;
41        }
42        else
43        {
44            $this->form_validation->set_message('
45                checkDatabase', 'Invalid username or
46                password');
47            return false;
48        }
49    }
50    function logoutUser()
51    {
52        $this->session->sess_destroy();
53    }
54 }
```

Listing 3: BoxModel.php

```
1 <?php
2 class BoxModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7     }
8     function getAllBox()
9     {
10        $query = $this->db->get('box');
11
12        if($query->num_rows() > 0)
13        {
14            return $query->result();
15        }
16        else
17        {
18            return false;
19        }
20    }
21    function getAllAvailableBox()
22    {
23        $query = $this->db
24            ->where('is_available', 1)
25            ->get('box');
26
27        if($query->num_rows() > 0)
28        {
29            return $query->result();
30        }
31        else
32        {
33            return false;
34        }
35    }
36    function getBoxId($boxNumber)
37    {
38        $query = $this->db
39            ->where('number', $boxNumber )
40            ->limit(1)
41            ->get('box');
42
43        if($query->num_rows() > 0)
44        {
45            return $query->row()->id;
46        }
47    }
48 }
```

```

50     else
51     {
52         return false;
53     }
54 }
55
56 function insertBox($boxName, $levelId)
57 {
58     $data = array(
59         'name' => $boxName,
60         'level_id' => $levelId
61     );
62
63     $isSuccess = $this->db->insert('box',
64         $data);
65
66     if($isSuccess)
67     {
68         return $this->db->insert_id();
69     }
70     return false;
71 }
72
73 function countOfBoxInLevel($levelId)
74 {
75     $this->db->like('level_id', $levelId)
76     ->from('box');
77
78     return $this->db->count_all_results();
79 }
80
81 function checkBoxName($boxName)
82 {
83     $query = $this->db
84         ->where('name', $boxName )
85         ->get('box');
86
87     if($query->num_rows() > 0)
88     {
89         return $query->row()->id;
90     }
91     else
92     {
93         return false;
94     }
95 }
96
97 function getLevelIdContainingBox($boxName)
98 {
99     $query = $this->db
100         ->where('name', $boxName )
101         ->limit(1)
102         ->get('box');
103
104     if($query->num_rows() > 0)
105     {
106         return $query->row()->level_id;
107     }
108     else
109     {
110         return false;
111     }
112 }
113
114 function updateBoxAvailability($boxId)
115 {
116     $full = true;
117     $query = $this->db
118         ->where('box_id', $boxId )
119         ->get('slot');
120
121     if($query->num_rows() > 0)
122     {
123         foreach ($query->result() as $row)
124         {
125             if($row->is_available == 1)
126             {
127                 $full = false;
128                 break;
129             }
130         }
131         if($full == true)
132         {
133             $this->db
134                 ->set('is_available', 0)
135                 ->where('id', $boxId)
136                 ->update('box');
137         }
138         return $full;
139     }
140     else
141     {
142         return false;
143     }
144 }
145
146 function getBox($levelId)
147 {
148     $query = $this->db
149         ->where('level_id', $levelId )
150         ->get('box');
151
152     if($query->num_rows() > 0)
153     {
154         return $query->result();
155     }
156     else
157     {
158         return false;
159     }
160 }
161 }>

```

#### Listing 4: Dashboard.php

```

1 <?php if(!defined('BASEPATH')) exit('No direct27
2 script access allowed');
3
4 class Dashboard extends CI_Controller
5 {
6     public $userData;
7
8     function __construct()
9     {
10         parent::__construct();
11         $this->load->model('ProjectModel', '', TRUE);
12         $this->load->model('UserModel', '', TRUE);
13         $this->load->model('UserTypeModel', '',
14             TRUE);
15         $this->load->helper(array('form'));
16         $this->userData = $this->session->userdata
17             ('logged_in');
18
19         if( $this->userData == null )
20         {
21             redirect('authenticate/login');
22         }
23     }
24
25     function index()
26     {
27         $data['user'] = $this->UserModel->
28             getUserWithId($this->userData['id']);
29         $data['pageTitle'] = "";
30         $data['pageHeader'] = "Home";
31         $userId = $this->userData['id'];
32
33         if( $this->userData['is_sysadmin'] == 1 )
34         {
35             $this->load->view('dashboard/home_admin
36                 ', $data );
37         }
38         else
39         {
40             $this->userData['projectId'] = null;
41             $this->userData['userId'] = null;
42             $this->userData['projectName'] = null;
43             $this->userData['usertype'] = null;
44             $data['projects'] = $this->ProjectModel
45                 ->getAllUserProjects( $userId );
46             $this->load->view('dashboard/home',
47                 $data );
48         }
49     }
50
51     function logout()
52     {
53         $this->session->unset_userdata('logged_in'
54             );
55         redirect('login', 'refresh');
56     }
57 }
58 }>

```

#### Listing 5: Profile.php

```

1 <?php
2 class Profile extends CI_Controller
3 {
4     function __construct()
5     {
6         parent::__construct();
7
8         $this->load->model('ProjectModel', '', TRUE);
9         $this->load->model('UserModel', '', TRUE);
10        $this->load->model('UserTypeModel', '',
11            TRUE);
12        $this->load->model('SystemLogModel', '',
13            TRUE);

```



```

11
12     $this->userData = $this->session->userdata84
    ('logged_in');
13
14     if( $this->userData == null )           85
15     {                                     86
16         redirect('authenticate/login');   87
17     }                                     88
18 }
19
20 function index()                          89
21 {                                         90
22     $data['pageTitle'] = "";
23     $data['pageHeader'] = "Profile";      91
24
25     $data['user'] = $this->UserModel->
    getUserWithId($this->userData['id']);  93
26     $this->load->view('profile/index', $data); 94
27 }
28
29 function edit()                            95
30 {                                         96
31     $this->load->helper(array('form'));
32     $data['pageTitle'] = "";
33     $data['pageHeader'] = "Profile";      97
34
35     $data['userTypes'] = $this->UserTypeModel 99
    ->getUserTypes();
36     $data['user'] = $this->UserModel->
    getUserWithId($this->userData['id']);  101
37     $this->load->view('profile/edit', $data); 102
38 }
39
40 function update()                          103
41 {                                         104
42     $this->load->helper(array('form'));
43     $data['username'] = $this->userData['
    username'];
44     $data['firstname'] = $this->userData['
    firstname'];
45     $data['fullname'] = $this->userData['
    fullname'];
46     $userId = $this->userData['id'];
47
48     $data['pageTitle'] = "";
49     $data['pageHeader'] = "Profile";
50
51     $userId = $this->input->post('userId'); 112
52     $username = $this->input->post('username');113
    ;
53     $currentPassword = $this->input->post('
    currentPassword');
54     $newPassword = $this->input->post('
    newPassword');
55     $firstname = $this->input->post('firstNam117
    e');
56     $lastname = $this->input->post('lastNam118
    e');
57     $emailAddress = $this->input->post('
    emailAd');
58     $birthdate = $this->input->post('birthDat123
    e');
59     $sex = $this->input->post('sex');
60     $isActive = '1';
61
62     if( $currentPassword != '' )
63     {
64         if( $this->UserModel->isSamePassword(
    $userId, $currentPassword ) == true ) 127
65         {
66             if( ( $newPassword != '' ) && ( $this130
    ->UserModel->isSamePassword( $userId,
    $newPassword ) == false ) )
67             {
68                 $this->UserModel->updatePassword(
    $userId, $newPassword);
69             }
70
71             if( ( $username != '' ) && (
    strcmp($username, $this->UserModel->137
    getUsername( $userId ) ) ) )
72             {
73                 $this->UserModel->updateUsername(
    $userId, $username);
74             }
75
76             if( ( $firstname != '' ) && (
    strcmp($firstname, $this->UserModel->143
    getUserFirstName( $userId ) ) ) )
77             {
78                 $this->UserModel->updateFirstName(
    $userId, $firstname);
79
80                 $this->session->unset_userdata('
    logged_in')['firstname'];
81                 $this->session->unset_userdata('
    logged_in')['fullname'];
82
83                 $this->userData['firstname'] =
    $firstname;

```

```

153 {
154     date_default_timezone_set('Asia/Manila');
155     $datestring = "%Y-%m-%d %h:%i:%s";
156     $timestamp = mdate($datestring, time());
157     $this->SystemLogModel->insertSystemLog(
158         $timestamp, $log, $this->userData['id']);
    }
}

```

## Listing 6: ProjectModel.php

```

1 <?php
2 class ProjectModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7         $this->load->helper('date');
8     }
9
10    function assignUserToProject($userId,
11        $projectId)
12    {
13        $data = array(
14            'user_id' => $userId,
15            'project_id' => $projectId
16        );
17        $isSuccess = $this->db->insert('
18            user_has_project', $data);
19        return $isSuccess;
20    }
21    function assignSampleToProject($sampleId,
22        $projectId)
23    {
24        $data = array(
25            'sample_id' => $sampleId,
26            'project_id' => $projectId
27        );
28        $isSuccess = $this->db->insert('
29            project_has_sample', $data);
30        if($isSuccess)
31        {
32            return $this->db->insert_id();
33        }
34        else
35        {
36            return false;
37        }
38    }
39
40    function getProjectSamples($projectId)
41    {
42        $this->db->select("sample.barcode");
43        $this->db->from("project_has_sample,
44            sample");
45        $this->db->where("project_has_sample.
46            project_id = '$projectId'");
47        $this->db->where('sample.id =
48            project_has_sample.sample_id');
49        $query = $this->db->get();
50        if($query->num-rows() > 0)
51        {
52            return $query->result();
53        }
54        else
55        {
56            return false;
57        }
58    }
59    function getUserProjects($userId,
60        $userIdType)
61    {
62        $query = $this->db->where('user_profile.
63            user_id', $userId)
64            ->where('user_profile.
65                user_type_id', $userIdType)
66            ->join('project', 'project.id =
67                user_profile.project_id')
68            ->from('user_profile')
69            ->get();
70        if($query->num-rows() > 0)
71        {
72            return $query->result();
73        }
74        else
75        {
76            return false;
77        }
78    }
79    function getUserProjectsExceptSessionProject(
80        $userId, $userIdType, $projectId)
81    {
82        $query = $this->db->where('user_profile.
83            user_id', $userId)
84            ->where('user_profile.
85                user_type_id', $userIdType)
86            ->join('project', 'project.id =
87                user_profile.project_id')
88            ->from('user_profile')
89            ->get();
90        if($query->num-rows() > 0)
91        {
92            return $query->result();
93        }
94        else
95        {
96            return false;
97        }
98    }
99    function getAllUserProjects($userId)
100    {
101        $query = $this->db
102            ->select('user_profile.project_id
103                as pid, project.name as pname, user_type.
104                id as utid, user_type.name as utname')
105            ->where('user_profile.user_id',
106                $userId)
107            ->where('project.id =
108                user_profile.project_id')
109            ->where('user_type.id =
110                user_profile.user_type_id')
111            ->from('user_profile, project,
112                user_type')
113            ->get();
114        if($query->num-rows() > 0)
115        {
116            return $query->result();
117        }
118        else
119        {
120            return false;
121        }
122    }
123    function insertNewProject($projectId,
124        $description, $startDate, $endDate)
125    {
126        $data = array(
127            'name' => $projectId,
128            'description' => $description,
129            'start_date' => $startDate,
130            'end_date' => $endDate
131        );
132        $isSuccess = $this->db->insert('project',
133            $data);
134        if($isSuccess)
135        {
136            return $this->db->insert_id();
137        }
138        return false;
139    }
140    function updateProject($projectId,
141        $projectId, $description, $startDate,
142        $endDate)
143    {
144        $data = array(
145            'name' => $projectId,
146            'description' => $description,
147            'start_date' => $startDate,
148            'end_date' => $endDate
149        );
150        $this->db->where('id', $projectId);
151        $isSuccess = $this->db->update('project',
152            $data);
153        return $isSuccess;
154    }
155    function getStatus($projectId){
156        $query = $this->db->query("Select end_date
157            from project where id='$projectId'");
158        if($query->num-rows() > 0)
159        {
160            $endDate = $query->row()->end_date;
161        }
162    }

```

```

154         if($endDate != null)
155         {
156             if ( strtotime($endDate) < strtotime(
now') )
157             {
158                 return "Finished";
159             }
160         }
161         return "Ongoing";
162     }
163     else
164     {
165         return false;
166     }
167 }
168 }
169
170 function getAllProjects()
171 {
172     $query = $this->db->get('project');
173
174     if($query->num.rows() > 0)
175     {
176         return $query->result();
177     }
178     else
179     {
180         return false;
181     }
182 }
183
184 function getIdOfUser($userId,
    $userId)
185 {
186     $query = $this->db->query("Select
user_profile.project_id from user_profile
where user_profile.user_id = '$userId'
and user_profile.user_type_id = '
$userId'");
187
188     if($query->num.rows() > 0)
189     {
190         return $query->result();
191     }
192     else
193     {
194         return false;
195     }
196 }
197
198 function getId($projectId)
199 {
200     $query = $this->db
->where('name', $projectId)
->from('project')
->limit(1)
->get();
201
202     if($query->num.rows() > 0)
203     {
204         return $query->row()->id;
205     }
206     else
207     {
208         return false;
209     }
210 }
211
212 function getId($projectId)
213 {
214     $query = $this->db
->where('id', $projectId)
->limit(1)
->get('project');
215
216     if($query->num.rows() > 0)
217     {
218         return $query->row();
219     }
220     else
221     {
222         return false;
223     }
224 }
225
226 function getId($projectId)
227 {
228     $query = $this->db
->where('id', $projectId)
->from('project')
->limit(1)
->get();
229
230     if($query->num.rows() > 0)
231     {
232         return $query->row();
233     }
234     else
235     {
236         return false;
237     }
238 }
239
240 function getId($projectId)
241 {
242     $query = $this->db
->where('id', $projectId)
->from('project')
->limit(1)
->get();
243
244     if($query->num.rows() > 0)
245     {
246         return $query->row();
247     }
248     else
249     {
250         return false;
251     }
252 }
253
254 function getId($projectId)
255 {
256     $query = $this->db->query("Select name
from project where id = '$projectId'");
257
258     if($query->num.rows() > 0)
259     {
260         return $query->row()->name;
261     }
262     else
263     {
264         return false;
265     }
266 }
267
268 function getId($projectId)
269 {
270     $query = $this->db->query("Select
description from project where id = '
$projectId'");
271
272     if($query->num.rows() > 0)
273     {
274         return $query->row()->description;
275     }
276     else
277     {
278         return false;
279     }
280 }
281
282 function getId($projectId)
283 {
284     $query = $this->db->query("Select
start_date from project where id = '
$projectId'");
285
286     if($query->num.rows() > 0)
287     {
288         return $query->row()->start_date;
289     }
290     else
291     {
292         return false;
293     }
294 }
295
296 function getId($projectId)
297 {
298     $query = $this->db->query("Select
end_date from project where id = '
$projectId'");
299
300     if($query->num.rows() > 0)
301     {
302         return $query->row()->end_date;
303     }
304     else
305     {
306         return false;
307     }
308 }
309
310 function getId($projectId)
311 {
312     $query = $this->db
->where('project_id', $projectId)
->where('user_type_id', 2)
->limit(1)
->get('user_profile');
313
314     if($query->num.rows() > 0)
315     {
316         return $query->row()->user_id;
317     }
318     else
319     {
320         return false;
321     }
322 }
323
324 function getId($projectId)
325 {
326     $query = $this->db->select('user_id, user
.firstname, user.lastname')
->from('user_profile, user')
->where('user_profile.project_id = '
$projectId')
->where('user_profile.user_type_id =
2')
->where('user_profile.user_id = user.
id')
->get();
327
328     if($query->num.rows() > 0)
329     {
330         return $query->row();
331     }
332     else
333     {
334         return false;
335     }
336 }

```

```

336     return $query->result();
337 }
338 else
339 {
340     return false;
341 }
342 }
343
344 function getResearchers($projectId)
345 {
346     $query = $this->db->select( 'user.id, user
347     .firstname, user.lastname' )
348     ->from( "user_profile, user" )
349     ->where( "user_profile.project_id = '370
350     $projectId'" )
351     ->where( "user_profile.user_type_id =371
352     1" )
353     ->where( "user_profile.user_id = user372
354     id" )
355     ->get();
356
357     if($query->num.rows() > 0)
358     {
359         return $query->result();
360     }
361     else
362     {
363         return false;
364     }
365 }
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385 ?>

```

## Listing 7: Projects.php

```

1 <?php
2 class Projects extends CI_Controller
3 {
4     private $userData;
5
6     function __construct()
7     {
8         parent::__construct();
9         $this->load->model('ProjectModel', '', TRUE);
10        $this->load->model('UserModel', '', TRUE);
11        $this->load->model('UserTypeModel', '', TRUE);
12        $this->load->model('SystemLogModel', '', TRUE);
13
14        $this->load->helper(array('form'));
15        $this->userData = $this->session->userdata(
16        'logged_in');
17
18        if( $this->userData == null )
19        {
20            redirect('authenticate/login');
21        }
22
23        function index()
24        {
25            $data['pageTitle'] = "Projects";
26            $data['pageHeader'] = "Project List";
27            $data['projects'] = $this->ProjectModel->
28            getAllProjects();
29
30            $this->load->view('projects/index', $data);
31        }
32
33        function create()
34        {
35            $data['username'] = $this->userData[ '
36            username' ];
37            $data['firstname'] = $this->userData[ '
38            firstname' ];
39            $data['fullname'] = $this->userData[ '
40            fullname' ];
41            $userId = $this->userData[ 'id' ];
42
43            $data['pageTitle'] = "Projects";
44            $data['pageHeader'] = "New Project";
45
46            $data['users'] = $this->UserModel->
47            getAllUsersExceptSysAdmin();
48            $this->load->view('projects/create', $data);
49        }
50
51        function insert()
52        {
53            $this->load->helper(array('form'));
54            $data['username'] = $this->userData[ '
55            username' ];
56            $data['firstname'] = $this->userData[ '
57            firstname' ];
58            $data['fullname'] = $this->userData[ '
59            fullname' ];
60            $userId = $this->userData[ 'id' ];
61
62            $data['pageTitle'] = "Projects";
63            $data['pageHeader'] = "Project List";
64
65            $projectName = $this->input->post( '
66            projectName' );
67            $description = $this->input->post( '
68            description' );
69            $startDate = $this->input->post( 'startDate
70            ' );
71            $endDate = $this->input->post( 'endDate' );
72            $projectHeadUserId = $this->input->post( '
73            projectHead' );
74            $projectHeadId = 2;
75            $researcherId = 1;
76
77            if(( $endDate > $startDate ) == true)
78            {
79                $this->ProjectModel->insertNewProject(
80                $projectName, $description, $startDate,
81                $endDate);
82
83                $log = 'added project ( ' . $projectName . '
84                ' );
85                $this->submitSystemLog($log);
86
87                $projectId = $this->ProjectModel->
88                getId($projectName);
89                $checkResearchers = false;
90
91                foreach( $this->input->post( 'researchers'
92                ) as $userId )
93                {
94                    if( $projectHeadUserId == $userId )
95                    {
96                        $checkResearchers = true;
97                    }
98                }
99                if( $checkResearchers == false )
100                {
101                    $this->UserModel->assignUserToProject(
102                    $projectHeadId, $projectHeadUserId,
103                    $projectId);
104                    foreach( $this->input->post( '
105                    researchers' ) as $userId )
106                    {
107                        $this->UserModel->
108                        assignUserToProject( $researcherId ,
109                        $userId, $projectId);
110                    }
111                    $data['message'] = array(
112                    'type' => 'success',
113                    'icon' => 'check',
114                    'text' => 'You have
115                    successfully added a new project'
116                    );
117                }
118                else
119                {
120                    $data['message'] = array(
121                    'type' => 'error',
122                    'icon' => 'ban',
123                    'text' => 'You have an
124                    incorrect input'
125                );
126            }
127        }
128    }
129 }

```

```

102     );
103     }
104 }
105 else
106 {
107     $data['message'] = array(
108         'type' => 'error',
109         'icon' => 'ban',
110         'text' => 'You have an incorrect
input. The end date should be after the
start date.'
111     );
112 }
113 $data['users'] = $this->UserModel->
getAllUsersExceptSysAdmin();
114 $data['projects'] = $this->ProjectModel->
getAllProjects();
115 $this->load->view('projects/create', $data);
116 }
117
118 function edit($projectId)
119 {
120     $this->load->helper(array('form'));
121     $data['username'] = $this->userData['
username'];
122     $data['firstname'] = $this->userData['
firstname'];
123     $data['fullname'] = $this->userData['
fullname'];
124     $userId = $this->userData['id'];
125     $data['user'] = $this->UserModel->
getUserWithId(1);
126
127     $data['pageTitle'] = "Projects";
128     $data['pageHeader'] = "Edit Project";
129
130     $data['users'] = $this->UserModel->
getAllUsersExceptSysAdmin();
131     $data['project'] = $this->ProjectModel->
getProjectWithId($projectId);
132     $data['projectHeadUserId'] = $this->
ProjectModel->getProjectHeadUserId(
$projectId);
133     $data['researchers'] = $this->ProjectModel->
getResearchers($projectId);
134
135     $this->load->view('projects/edit', $data);
136 }
137
138 function update()
139 {
140     $this->load->helper(array('form'));
141     $data['username'] = $this->userData['
username'];
142     $data['firstname'] = $this->userData['
firstname'];
143     $data['fullname'] = $this->userData['
fullname'];
144     $userId = $this->userData['id'];
145     $data['user'] = $this->UserModel->
getUserWithId(1);
146
147     $data['pageTitle'] = "Projects";
148     $data['pageHeader'] = "Projects List";
149
150     $projectId = 2;
151     $researcherId = 1;
152
153     $projectId = $this->input->post('projectId');
154     $projectId = $this->input->post('projectId');
155     $projectId = $this->input->post('projectId');
156     $description = $this->input->post('description');
157     $startDate = $this->input->post('startDate');
158     $endDate = $this->input->post('endDate');
159     $projectHeadUserId = $this->input->post('projectHead');
160
161     if(($endDate > $startDate) == true)
162     {
163         if($projectHeadUserId != '')
164         {
165             $this->UserModel->updateProjectHead(
$projectId, $projectHeadUserId);
166
167             if($this->input->post('
researchersToRemove') != null)
168             {
169                 foreach($this->input->post('
researchersToRemove') as $userId)
170                 {
171                     $this->UserModel->removeResearcher(
$projectId, $userId);
172                 }
173
174                 if($this->input->post('researchersToAdd')
!= null)
175                 {
176                     foreach($this->input->post('
researchersToAdd') as $userId)
177                     {
178                         $this->UserModel->
assignUserToProject($researcherId,
$userId, $projectId);
179                     }
180
181                     $this->ProjectModel->updateProject(
$projectId, $projectName, $description,
$startDate, $endDate);
182                     $log = 'updated project ( ' . $projectName
. ' )';
183                     $this->submitSystemLog($log);
184
185                     $data['message'] = array(
186                         'type' => 'success',
187                         'icon' => 'check',
188                         'text' => 'You have successfully
updated the project'
189                     );
190                 }
191             }
192             else
193             {
194                 $data['message'] = array(
195                     'type' => 'error',
196                     'icon' => 'ban',
197                     'text' => 'You have an incorrect
input. The end date should be after the
start date.'
198                 );
199             }
200
201             $data['pageTitle'] = "Projects";
202             $data['pageHeader'] = "Edit Project";
203
204             $data['users'] = $this->UserModel->
getAllUsersExceptSysAdmin();
205             $data['project'] = $this->ProjectModel->
getProjectWithId($projectId);
206             $data['projectHeadUserId'] = $this->
ProjectModel->getProjectHeadUserId(
$projectId);
207             $data['researchers'] = $this->ProjectModel->
getResearchers($projectId);
208
209             $this->load->view('projects/edit', $data);
210
211             function submitSystemLog($log)
212             {
213                 date_default_timezone_set('Asia/Manila');
214                 $datestring = "%Y-%m-%d %h:%i:%s";
215                 $timestamp = mdate($datestring, time());
216
217                 $this->SystemLogModel->insertSystemLog(
$timestamp, $log, $this->userData['id']);
218             }
219
220             $this->userData = $this->session->userdata
('logged-in');
221
222             if($this->userData == null)
223             {
224                 redirect('authenticate/login');
225             }
226
227             function index()
228             {
229                 date_default_timezone_set('Asia/Manila');
230                 $datestring = "%Y-%m-%d %h:%i:%s";
231                 $timestamp = mdate($datestring, time());

```

## Listing 8: Reports.php

```

1 <?php
2 class Reports extends CI_Controller
3 {
4     private $userData;
5
6     function __construct()
7     {
8         parent::__construct();
9         $this->load->model('ReportsModel', '', TRUE);
10        $this->load->model('SpecimenTypeModel', '',
TRUE);
11        $this->load->helper('date');
12
13        $this->userData = $this->session->userdata
('logged-in');
14
15        if($this->userData == null)
16        {
17            redirect('authenticate/login');
18        }
19
20        function index()
21        {
22            date_default_timezone_set('Asia/Manila');
23            $datestring = "%Y-%m-%d %h:%i:%s";
24            $timestamp = mdate($datestring, time());

```

```

27 $data['pageTitle'] = "";
28 $data['pageHeader'] = "";
29
30 $count = [];
31 $data['types'] = $this->SpecimenTypeModel
32   ->getAllSpecimenTypes();
33
34 foreach($data['types'] as $row)
35 {
36     $c = $this->ReportsModel->
37     getCountWithSpecimenType($row->id, $this
38     ->userData['projectId']);
39     array_push($count, $c);
40 }
41 $data['counts'] = $count;
42 $this->load->view('reports/index', $data);
43
44 function pdf()
45 {
46     $count = [];
47     $data['types'] = $this->SpecimenTypeModel
48     ->getAllSpecimenTypes();
49
50     foreach($data['types'] as $row)
51     {
52         $c = $this->ReportsModel->
53         getCountWithSpecimenType($row->id, $this
54         ->userData['projectId']);
55         array_push($count, $c);
56     }
57     $data['counts'] = $count;
58     $datestring = "%Y-%m-%d-%h%i%s";
59     $timestamp2 = mdate($datestring, time());
60     $filename = "report".$timestamp2;
61     $pdfFilePath = FCPATH."downloads/reports/
62     $filename.pdf";
63
64     if (file_exists($pdfFilePath) == FALSE)
65     {
66         ini_set('memory_limit', '32M');
67         $html = $this->load->view('reports/
68         export', $data, true);
69
70         $this->load->library('pdf');
71         $pdf = $this->pdf->load();
72         $pdf->SetHeader($headerHtml);
73         $pdf->SetFooter('Institute of
74         Molecular Biology and Biotechnology (NIH)
75         '.'|{PAGENO}||'.date(DATE_RFC822));
76         $pdf->WriteHTML($html);
77         $pdf->Output($pdfFilePath, 'F');
78     }
79     redirect("downloads/reports/$filename.pdf"
80     );
81 }
82
83 function export()
84 {
85     $count = [];
86     $data['types'] = $this->SpecimenTypeModel
87     ->getAllSpecimenTypes();
88
89     foreach($data['types'] as $row)
90     {
91         $c = $this->ReportsModel->
92         getCountWithSpecimenType($row->id, $this
93         ->userData['projectId']);
94         array_push($count, $c);
95     }
96     $data['counts'] = $count;
97     $this->load->view('reports/export', $data)
98     ;
99 }

```

### Listing 9: ReportsModel.php

```

1 <?php
2 class ReportsModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7     }
8
9     function getCountWithSpecimenType($typeId,
10     $projectId)
11     {
12         $query = $this->db
13         ->from('sample')
14         ->join('project_has_sample', '
15         project_has_sample.sample_id = sample.id,
16         $typeId)
17         ->where('sample.specimen_type_id',
18         $typeId)
19         ->where('project_has_sample.
20         project_id', $projectId)
21         ->count_all_results();
22     }
23     return $query;
24 }
25
26 function getCountOfTestDonePerSample($testId,
27     $sampleId, $projectId)
28 {
29     $query = $this->db
30     ->from('sample_has_test')
31     ->where('sample_has_test.test_id',
32     $testId)
33     ->where('sample_has_test.sample_id',
34     $sampleId)
35     ->where('sample_has_test.
36     project_id', $projectId)
37     ->count_all_results();
38     return $query;
39 }
40
41 function getCountOfTestPerMonth($testId,
42     $month, $projectId)
43 {
44     $query = $this->db
45     ->from('sample_has_test')
46     ->where('sample_has_test.test_id',
47     $testId)
48     ->where('MONTH(sample_has_test.
49     timestamp)', $month)
50     ->where('YEAR(sample_has_test.
51     timestamp)', $year)
52     ->where('sample_has_test.
53     project_id', $projectId)
54     ->count_all_results();
55     return $query;
56 }
57
58 function getCountOfTestPerYear($testId,
59     $year, $projectId)
60 {
61     $query = $this->db
62     ->from('sample_has_test')
63     ->where('sample_has_test.test_id',
64     $testId)
65     ->where('YEAR(sample_has_test.
66     timestamp)', $year)
67     ->where('sample_has_test.
68     project_id', $projectId)
69     ->count_all_results();
70     return $query;
71 }
72
73 function getCountOfTestPerMonthYear($testId,
74     $month, $year, $projectId)
75 {
76     $query = $this->db
77     ->from('sample_has_test')
78     ->where('sample_has_test.test_id',
79     $testId)
80     ->where('MONTH(sample_has_test.
81     timestamp)', $month)
82     ->where('YEAR(sample_has_test.
83     timestamp)', $year)
84     ->where('sample_has_test.
85     project_id', $projectId)
86     ->count_all_results();
87     return $query;
88 }
89 }
90 }

```

### Listing 10: SampleModel.php

```

1 <?php
2 class SampleModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7     }
8
9     function getAllSamples()
10    {
11        $query = $this->db->get('sample');
12
13        if($query->num_rows() > 0)
14        {
15            return $query->result();
16        }
17        else
18        {
19            return false;
20        }
21    }

```

```

22
23 function getSamplesOfUser($userID)
24 {
25     $this->db->select(" user_profile . project_id 94
26         ");
27     $this->db->where(" user . id =          95
28         project_has_sample . sample_id ");
29 }
30
31 function getSamples($userId, $userId) 97
32 {
33     $this->db->select(" project . name , sample . id 98
34         , sample . barcode , sample . collection_date ,
35         sample . current_volume ");          99
36     $this->db->from(" project , sample ,
37         project_has_sample , user_profile "); 100
38     $this->db->where(" user_profile . user_id = 101
39         ' $userId ' ");
40     $this->db->where(" user_profile .
41         user_type_id = ' $userId ' ");
42     $this->db->where(" user_profile .
43         project_id = project_has_sample .
44         project_id ");
45     $this->db->where(" project_has_sample .
46         project_id = project . id ");
47     $this->db->where(" project_has_sample .
48         sample_id = sample . id ");
49     $query = $this->db->get ();
50
51     if ($query->num_rows() > 0)
52     {
53         return $query->result ();
54     }
55     else
56     {
57         return false;
58     }
59 }
60
61 function getSamplesOfProject($projectId) 125
62 {
63     $this->db->select(" project . name , sample . id 127
64         , sample . barcode , sample . collection_date 128
65         , sample . current_volume , specimen_type .
66         name as stname ");
67     $this->db->from(" project , sample ,
68         project_has_sample , specimen_type "); 132
69     $this->db->where(" project_has_sample .
70         project_id = ' $projectId ' ");
71     $this->db->where(" project_has_sample .
72         project_id = project . id ");
73     $this->db->where(" sample . id =
74         project_has_sample . sample_id ");
75     $this->db->where(" sample .
76         specimen_type_id = specimen_type . id ");
77     $query = $this->db->get ();
78
79     if ($query->num_rows() > 0)
80     {
81         return $query->result ();
82     }
83     else
84     {
85         return false;
86     }
87 }
88
89 function getSharedProjects($sampleId,
90     $projectId)
91 {
92     $this->db->select(" project . id , project .
93         name as pname ");
94     $this->db->where(" sample . id = $sampleId 154
95         ");
96     $this->db->where(" project_has_sample .
97         sample_id = $sampleId ");
98     $this->db->where(" project_has_sample .
99         project_id != $projectId ");
100     $this->db->where(" project_has_sample .
101         project_id = project . id ");
102     $this->db->from(" sample , project ,
103         project_has_sample ");
104     $query = $this->db->get ();
105
106     if ($query->num_rows() > 0)
107     {
108         return $query->result ();
109     }
110     else
111     {
112         return false;
113     }
114 }
115
116 function getSampleInformation($sampleId,
117     $projectId)
118 {
119     $this->db->select(" sample . id , sample .
120         barcode , sample . collection_date , sample .
121         original_volume , sample . current_volume ,
122         specimen_type . name as sname ");
123     $this->db->where(" sample . id = $sampleId "
124         );
125     $this->db->where(" sample .
126         specimen_type_id = specimen_type . id ");
127     $this->db->where(" project_has_sample .
128         sample_id = $sampleId ");
129     $this->db->where(" project_has_sample .
130         project_id = $projectId ");
131     $this->db->from(" sample , specimen_type ,
132         project , project_has_sample ");
133     $query = $this->db->get ();
134
135     if ($query->num_rows() > 0)
136     {
137         return $query->row ();
138     }
139     else
140     {
141         return false;
142     }
143 }
144
145 function getSampleBarcode($sampleId)
146 {
147     $query = $this->db
148         ->where(' id ', $sampleId)
149         ->from(' sample ')
150         ->limit(1)
151         ->get ();
152
153     if ($query->num_rows() > 0)
154     {
155         return $query->row()->barcode;
156     }
157     else
158     {
159         return false;
160     }
161 }
162
163 function getSampleId($barcode)
164 {
165     $query = $this->db
166         ->where(' barcode ', $barcode )
167         ->limit(1)
168         ->get(' sample ');
169
170     if ($query->num_rows() > 0)
171     {
172         return $query->row()->id;
173     }
174     else
175     {
176         return false;
177     }
178 }
179
180 function insertNewSample($barcode,
181     $collectionDate, $originalVolume,
182     $currentVolume, $specimenTypeId,
183     $sourceId, $slotId)
184 {
185     $data = array(
186         ' barcode ' => $barcode ,
187         ' collection_date ' => $collectionDate ,
188         ' original_volume ' => $originalVolume ,
189         ' current_volume ' => $currentVolume ,
190         ' specimen_type_id ' => $specimenTypeId ,
191         ' source_id ' => $sourceId ,
192         ' slot_id ' => $slotId
193     );
194
195     $isSuccess = $this->db->insert(' sample ',
196         $data);
197
198     if ($isSuccess)
199     {
200         return $this->db->insert_id ();
201     }
202     return false;
203 }
204
205 function logAccess($sampleId, $testId,
206     $timestamp, $amount, $userId, $projectId)
207 {
208     $data = array(
209         ' sample_id ' => $sampleId ,
210         ' test_id ' => $testId ,
211         ' timestamp ' => $timestamp ,
212         ' amount ' => $amount ,
213         ' user_id ' => $userId ,
214         ' project_id ' => $projectId
215     );

```

```

179
180     $isSuccess = $this->db->insert('
181         sample_has_test', $data);
182
183     if($isSuccess)
184     {
185         return $this->db->insert_id();
186     }
187     else
188     {
189         return false;
190     }
191 }
192 function subtractCurrentVolume($sampleId,
193     $amount)
194 {
195     $newVolume = $this->getCurrentVolume(
196         $sampleId) - $amount;
197     $this->db
198     ->set('current_volume', $newVolume)
199     ->where('id', $sampleId);
200     $isSuccess = $this->db->update('sample');
201     return $isSuccess;
202 }
203 function getCurrentVolume($sampleId)
204 {
205     $query = $this->db
206     ->where('id', $sampleId)
207     ->limit(1)
208     ->get('sample');
209
210     if($query->num-rows() > 0)
211     {
212         return $query->row()->current_volume;
213     }
214     else
215     {
216         return false;
217     }
218 }
219
220 function getAllSampleAccess($sampleId)
221 {
222     $query = $this->db->get('sample_has_test
223     ;
224
225     if($query->num-rows() > 0)
226     {
227         return $query->result();
228     }
229     else
230     {
231         return false;
232     }
233 }
234 function getSampleAccess($projectId)
235 {
236     $query = $this->db
237     ->select('project.id as pid, project.
238     name as pname, sample_has_test.id, sample_
239     .barcode, test.name, sample_has_test.
240     timestamp, sample_has_test.amount, user.
241     first_name, user.lastname')
242     ->from('project_has_sample')
243     ->where('project_has_sample.
244     project_id', $projectId)
245     ->join('sample', 'sample.id =
246     project_has_sample.sample_id')
247     ->join('sample_has_test', '
248     sample_has_test.sample_id = sample.id')
249     ->join('specimen_type', '
250     specimen_type.id = sample.
251     specimen_type_id')
252     ->join('user', 'user.id =
253     sample_has_test.user_id')
254     ->join('project', 'project.id =
255     sample_has_test.project_id')
256     ->join('test', 'test.id =
257     sample_has_test.test_id')
258     ->get();
259
260     if($query->num-rows() > 0)
261     {
262         return $query->result();
263     }
264     else
265     {
266         return false;
267     }
268 }
269 function getSampleLocation($sampleId)
270 {
271     $this->db->select(" freezer.number_of_shelf
272     , slot.row, slot.column, box.number as
273     bnumber, level.number as lnumber, rack.
274     number as rnumber, shelf.number as
275     snumber, freezer.name as fname");
276     $this->db->from("sample, slot, box, level,
277     rack, shelf, freezer");
278     $this->db->where("sample.id = $sampleId"
279     );
280     $this->db->where("sample.slot_id = slot.
281     id");
282     $this->db->where("slot.box_id = box.id")
283     );
284     $this->db->where("box.level_id = level.
285     id");
286     $this->db->where("level.rack_id = rack.
287     id");
288     $this->db->where("rack.shelf_id = shelf.
289     id");
290     $this->db->where("shelf.freezer_id =
291     freezer.id");
292     $query = $this->db->get();
293
294     if($query->num-rows() > 0)
295     {
296         return $query->result();
297     }
298     else
299     {
300         return false;
301     }
302 }
303 function getSourceId($sampleId)
304 {
305     $query = $this->db
306     ->where('id', $sampleId)
307     ->limit(1)
308     ->get('sample');
309
310     if($query->num-rows() > 0)
311     {
312         return $query->row()->source_id;
313     }
314     else
315     {
316         return false;
317     }
318 }
319 function getSlotId($sampleId)
320 {
321     $query = $this->db
322     ->where('id', $sampleId)
323     ->limit(1)
324     ->get('sample');
325
326     if($query->num-rows() > 0)
327     {
328         return $query->row()->slot_id;
329     }
330     else
331     {
332         return false;
333     }
334 }
335 function updateSampleInfo($sampleId,
336     $barcode, $collectionDate,
337     $originalVolume, $currentVolume,
338     $specimenTypeId)
339 {
340     $data = array(
341         'barcode' => $barcode,
342         'collection_date' => $collectionDate,
343         'original_volume' => $originalVolume,
344         'current_volume' => $currentVolume,
345         'specimen_type_id' => $specimenTypeId
346     );
347
348     $this->db->where('id', $sampleId);
349     $isSuccess = $this->db->update('sample',
350     $data);
351     return $isSuccess;
352 }
353 function updateSampleSlot($slotId, $sampleId)
354 {
355     $isSuccess = $this->db
356     ->set('slot_id', $slotId)
357     ->where('id', $sampleId)
358     ->update('sample');
359     return $isSuccess;
360 }
361 function isSampleInProject($sampleId,
362     $projectId)
363 {

```



```

343 $query = $this->db 351 }
344     ->where( 'sample_id', $sampleId )352 else
345     ->where( 'project_id', $projectId353 {
) 354     return false;
346     ->get( 'project_has_sample' ); 355 }
347 356 }
348 if($query->num.rows() > 0) 357 }
349 { 358 ?>
350     return true;

```

Listing 11: SingleProject.php

```

1 <?php
2 class SingleProject extends CI_Controller
3 {
4     private $userData;
5
6     function __construct()
7     {
8         parent::__construct();
9         $this->load->model('ProjectModel', '', TRUE);
10        $this->load->model('UserModel', '', TRUE);
11        $this->load->model('UserTypeModel', '', TRUE);
12        $this->load->model('SystemLogModel', '', TRUE);
13
14        $this->load->helper(array('form'));
15        $this->userData = $this->session->userdata('logged_in');
16
17        if( $this->userData == null )
18        {
19            redirect('authenticate/login');
20        }
21    }
22
23    function start($projectId, $userId)
24    {
25        $this->userData['projectId'] = $projectId;
26        $this->userData['userId'] = $userId;
27        $this->userData['projectName'] = $this->ProjectModel->getProjectName($projectId);
28        $this->userData['usertype'] = $this->UserTypeModel->getUserType($userId);
29
30        $this->session->set_userdata('logged_in', $this->userData);
31        $this->index();
32    }
33
34    function index()
35    {
36        $data['pageTitle'] = "Project";
37        $data['pageHeader'] = "View Project";
38
39        $data['project'] = $this->ProjectModel->getProject($this->userData['projectId']);
40        $data['researchers'] = $this->ProjectModel->getResearchers($this->userData['projectId']);
41        $data['projectHead'] = $this->ProjectModel->getProjectHead($this->userData['projectId']);
42
43        $this->load->view('singleproject/index', $data);
44    }
45
46    function edit()
47    {
48        $this->load->helper(array('form'));
49        $data['pageTitle'] = "Project";
50        $data['pageHeader'] = "Edit Project";
51
52        $data['users'] = $this->UserModel->getAllUsersExceptSysAdmin();
53        $data['project'] = $this->ProjectModel->getProject($this->userData['projectId']);
54        $data['projectHeadUserId'] = $this->ProjectModel->getProjectHeadUserId($this->userData['projectId']);
55        $data['researchers'] = $this->ProjectModel->getResearchers($this->userData['projectId']);
56
57        $this->load->view('singleproject/edit', $data);
58    }
59
60 function update()
61 {
62     $this->load->helper(array('form'));
63     $data['pageTitle'] = "Project";
64     $data['pageHeader'] = "View Project";
65
66     $projectName = $this->input->post('projectName');
67     $description = $this->input->post('description');
68     $startDate = $this->input->post('startDate');
69     $endDate = $this->input->post('endDate');
70
71     if( ($this->ProjectModel->getProjectId($projectName) == false) || ($this->ProjectModel->getProjectId($projectName) == $this->userData['projectId']) )
72     {
73         if($this->ProjectModel->updateProject($this->userData['projectId'], $projectName, $description, $startDate, $endDate) != false)
74         {
75             $log = 'updated project (' . $projectName . ')';
76             $this->submitSystemLog($log);
77
78             $data['message'] = 'The project is successfully updated';
79             $data['pageTitle'] = "Project";
80             $data['pageHeader'] = "View Project";
81
82             $data['project'] = $this->ProjectModel->getProject($this->userData['projectId']);
83             $data['researchers'] = $this->ProjectModel->getResearchers($this->userData['projectId']);
84             $data['projectHead'] = $this->ProjectModel->getProjectHead($this->userData['projectId']);
85
86             $this->load->view('singleproject/index', $data);
87         }
88     }
89     else
90     {
91         $data['message'] = 'The project name is not available. Please enter another project name.';
92         $data['pageTitle'] = "Project";
93         $data['pageHeader'] = "Edit Project";
94
95         $data['users'] = $this->UserModel->getAllUsersExceptSysAdmin();
96         $data['project'] = $this->ProjectModel->getProject($this->userData['projectId']);
97         $data['projectHeadUserId'] = $this->ProjectModel->getProjectHeadUserId($this->userData['projectId']);
98         $data['researchers'] = $this->ProjectModel->getResearchers($this->userData['projectId']);
99
100        $this->load->view('singleproject/edit', $data);
101    }
102 }
103
104 function submitSystemLog($log)
105 {
106     date_default_timezone_set('Asia/Manila');
107     $datestring = "%Y-%m-%d %h:%i:%s";
108     $timestamp = mdate($datestring, time());
109
110     $this->SystemLogModel->insertSystemLog($timestamp, $log, $this->userData['id']);
111 }
112 }

```

Listing 12: SlotModel.php

```

1 <?php
2 class SlotModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7     }
8
9     function getAllSlot()

```

```

10 {
11     $query = $this->db->get('freezer');
12
13     if($query->num_rows() > 0)
14     {
15         return $query->result();
16     }
17     else
18     {
19         return false;
20     }
21 }
22
23 function getSlotId($boxId, $row, $column)
24 {
25     $query = $this->db
26         ->where('box_id', $boxId )
27         ->where('row', $row )
28         ->where('column', $column )
29         ->limit(1)
30         ->get('slot');
31
32     if($query->num_rows() > 0)
33     {
34         return $query->row()->id;
35     }
36     else
37     {
38         return false;
39     }
40 }
41
42 function insertIntoSlot($slotId)
43 {
44     $isSuccess = $this->db
45         ->set('is_available', 0)
46         ->where('id', $slotId)
47         ->update('slot');
48     return $isSuccess;
49 }
50
51 function removeFromSlot($slotId)
52 {
53     $isSuccess = $this->db
54         ->set('is_available', 1)
55         ->where('id', $slotId)
56         ->update('slot');
57     return $isSuccess;
58 }
59
60 function getBoxContainingSlot($row, $column)
61 {
62     $query = $this->db
63         ->where('row', $row )
64         ->where('column', $column )
65         ->limit(1)
66         ->get('slot');
67
68     if($query->num_rows() > 0)
69     {
70         return $query->row()->box_id;
71     }
72     else
73     {
74         return false;
75     }
76 }
77
78 function isSlotAvailable($boxId, $row,
79     $column)
80 {
81     $query = $this->db
82         ->where('row', $row )
83         ->where('column', $column )
84         ->where('box_id', $boxId )
85         ->limit(1)
86         ->get('slot');
87
88     if($query->num_rows() > 0)
89     {
90         if($query->row()->is_available == 1)
91         {
92             return true;
93         }
94         else
95         {
96             return false;
97         }
98     }
99     else
100     {
101         return false;
102     }
103 }
104 ?>

```

### Listing 13: SourceModel.php

```

1 <?php
2 class SourceModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7     }
8
9     function getAllSources()
10    {
11        $query = $this->db->get('source');
12
13        if($query->num_rows() > 0)
14        {
15            return $query->result();
16        }
17        else
18        {
19            return false;
20        }
21    }
22
23    function getSourceSex($sourceId)
24    {
25        $query = $this->db->query("Select sex from
26            source where id ='$sourceId'");
27
28        if($query->num_rows() > 0)
29        {
30            return $query->row()->sex;
31        }
32        else
33        {
34            return false;
35        }
36    }
37
38    function insertNewSource($firstName,
39        $lastName, $sex, $birthdate, $hospital)
40    {
41        $data = array(
42            'firstname' => $firstName,
43            'lastname' => $lastName,
44            'sex' => $sex,
45            'birthdate' => $birthdate,
46            'hospital_name' => $hospital
47        );
48
49        $isSuccess = $this->db->insert('source',
50            $data);
51        if($isSuccess)
52        {
53            return $this->db->insert_id();
54        }
55        else
56        {
57            return false;
58        }
59    }
60
61    function updateSource($sourceId, $firstName,
62        $lastName, $sex, $birthdate, $hospital)
63    {
64        $data = array(
65            'firstname' => $firstName,
66            'lastname' => $lastName,
67            'sex' => $sex,
68            'birthdate' => $birthdate,
69            'hospital_name' => $hospital
70        );
71
72        $this->db->where('id', $sourceId);
73        $isSuccess = $this->db->update('source',
74            $data);
75        return $isSuccess;
76    }
77
78    function getSourceInformation($sampleId)
79    {
80        $this->db->select("source.firstname,
81            source.lastname, source.sex, source.
82            birthdate, source.hospital_name");
83        $this->db->where("sample.id = $sampleId"
84        );
85        $this->db->where("sample.source_id =
86            source.id");
87        $this->db->from("sample, source");
88        $query = $this->db->get();
89
90        if($query->num_rows() > 0)
91        {
92            return $query->result();
93        }
94        else
95        {
96            return false;
97        }
98    }
99 }
100 ?>

```

## Listing 14: Specimen.php

```

1 <?php
2 class Specimen extends CI_Controller
3 {
4     private $userData;
5
6     function __construct()
7     {
8         parent::__construct();
9         $this->load->model('ProjectModel','', TRUE);
10        $this->load->model('UserModel','', TRUE);
11        $this->load->model('UserTypeModel','', TRUE);
12        $this->load->model('SampleModel','', TRUE);
13        $this->load->model('SpecimenTypeModel','', TRUE);
14        $this->load->model('BoxModel','', TRUE);
15        $this->load->model('SlotModel','', TRUE);
16        $this->load->model('SourceModel','', TRUE);
17        $this->load->model('TestModel','', TRUE);
18        $this->load->model('SystemLogModel','', TRUE);
19
20        $this->userData = $this->session->userdata('logged_in');
21
22        if( $this->userData == null )
23        {
24            redirect('authenticate/login');
25        }
26    }
27
28    function index()
29    {
30        $data['pageTitle'] = "Specimen";
31        $data['pageHeader'] = "Sample List";
32
33        $data['samples'] = $this->SampleModel->getSamplesOfProject($this->userData['projectId']);
34        $this->load->view('specimen/index', $data);
35    }
36
37    function create()
38    {
39        $this->load->helper(array('form'));
40        $data['pageTitle'] = "Specimen";
41        $data['pageHeader'] = "New Specimen Sample";
42
43        $data['projects'] = $this->ProjectModel->getUserProjectsExceptSessionProject($this->userData['id'], $this->userData['usertypeid'], $this->userData['projectId']);
44        $data['specimenTypes'] = $this->SpecimenTypeModel->getAllSpecimenTypes();
45        $data['boxes'] = $this->BoxModel->getAllAvailableBox();
46
47        $this->load->view('specimen/create', $data);
48    }
49
50    function insert()
51    {
52        $this->load->helper(array('form'));
53        $data['pageTitle'] = "Specimen";
54        $data['pageHeader'] = "New Sample";
55
56        $data['projects'] = $this->ProjectModel->getUserProjectsExceptSessionProject($this->userData['id'], $this->userData['usertypeid'], $this->userData['projectId']);
57        $data['specimenTypes'] = $this->SpecimenTypeModel->getAllSpecimenTypes();
58        $data['boxes'] = $this->BoxModel->getAllAvailableBox();
59
60        $barcode = $this->input->post('barcode');
61        $specimenTypeId = $this->input->post('type');
62        $collectionDate = $this->input->post('collectionDate');
63        $originalVolume = $this->input->post('originalVolume');
64        $masked = $this->input->post('masked');
65
66        $boxNumber = $this->input->post('boxNumber');
67        $row = $this->input->post('row');
68        $column = $this->input->post('column');
69
70        $checkIfSlotIsAvailable = false;
71        $checkIfBarcodeIsUnique = false;
72
73        $boxId = $this->BoxModel->getBoxId($boxNumber);
74        if($this->SlotModel->isSlotAvailable($boxId, $row, $column) == true)
75        {
76            $checkIfSlotIsAvailable = true;
77        }
78
79        if($this->SampleModel->getSampleId($barcode) == false)
80        {
81            $checkIfBarcodeIsUnique = true;
82        }
83
84        if(($checkIfBarcodeIsUnique == true) && ($checkIfSlotIsAvailable == true))
85        {
86            $slotId = $this->SlotModel->getSlotId($boxId, $row, $column);
87            $insertSlot = $this->SlotModel->insertIntoSlot($slotId);
88
89            $sourceId;
90            if($masked != 'on')
91            {
92                $firstName = $this->input->post('fName');
93                $lastName = $this->input->post('lName');
94                $sex = $this->input->post('sourceSex');
95                $birthdate = $this->input->post('birthdate');
96                $hospitalName = $this->input->post('hName');
97
98                $sourceId = $this->SourceModel->insertNewSource($firstName, $lastName, $sex, $birthdate, $hospitalName);
99            }
100            else
101            {
102                $hospitalName = $this->input->post('hName');
103                $sourceId = $this->SourceModel->insertNewSource(null, null, null, null, $hospitalName);
104            }
105            if(($insertSlot != false) && ($sourceId != false))
106            {
107                $this->BoxModel->updateBoxAvailability($boxId);
108                $sampleId = $this->SampleModel->insertNewSample($barcode, $collectionDate, $originalVolume, $originalVolume, $specimenTypeId, $sourceId, $slotId);
109                if($sampleId != false)
110                {
111                    $this->ProjectModel->assignSampleToProject($sampleId, $this->userData['projectId']);
112                    if($this->input->post('projectNames') != null)
113                    {
114                        foreach($this->input->post('projectNames') as $projectId)
115                        {
116                            $this->ProjectModel->assignSampleToProject($sampleId, $projectId);
117                        }
118                        $data['message'] = array('type' => 'success', 'icon' => 'check', 'text' => 'You have successfully added a new specimen sample. ');
119                    }
120                    $log = 'added specimen sample (' . $barcode . ')';
121                    $this->submitSystemLog($log);
122                }
123            }
124        }
125        else
126        {
127            if($checkIfBarcodeIsUnique != true)
128            {
129                $data['message'] = array('type' => 'error', 'icon' => 'ban', 'text' => 'The barcode already exist. Please enter another barcode. ');
130            }
131        }
132    }
133
134
135
136
137

```

```

138     }
139     else if($checkIfSlotIsAvailable != true)
140     {
141         $data['message'] = array(
142             'type' => 'error',
143             'icon' => 'ban',
144             'text' => 'The slot is already
145             occupied. Please choose another slot.'
146         );
147     }
148     else
149     {
150         $data['message'] = array(
151             'type' => 'error',
152             'icon' => 'ban',
153             'text' => 'You have entered an
154             incorrect input. Please check your data
155         );
156     }
157 }
158
159 function access()
160 {
161     $this->load->helper(array('form'));
162     $data['username'] = $this->userData['
163     username'];
164     $data['firstname'] = $this->userData['
165     firstname'];
166     $data['fullname'] = $this->userData['
167     fullname'];
168     $data['userType'] = $this->userData['
169     usertype'];
170     $userId = $this->userData['id'];
171     $data['user'] = $this->UserModel->
172     getUserWithId($this->userData['id']);
173
174     $data['pageTitle'] = "Specimen";
175     $data['pageHeader'] = "Specimen Sample
176     Access";
177     $data['tests'] = $this->TestModel->
178     getAllTests();
179
180     $this->load->view('specimen/access', $data
181 );
182 }
183
184 function logAccess()
185 {
186     $this->load->helper(array('form'));
187     $userId = $this->userData['id'];
188
189     $data['pageTitle'] = "Specimen";
190     $data['pageHeader'] = "Specimen Sample
191     Access";
192     $data['tests'] = $this->TestModel->
193     getAllTests();
194
195     $barcode = $this->input->post('barcode');
196     $amount = $this->input->post('amount');
197     $testId = $this->input->post('test');
198
199     date_default_timezone_set('Asia/Manila');
200     $datestring = "%Y-%m-%d %h:%i:%s";
201     $time = time();
202
203     $timestamp = mdate($datestring, $time);
204
205     $sampleId = $this->SampleModel->
206     getSampleId($barcode);
207     if($this->SampleModel->isSampleInProject
208     ($sampleId, $this->userData['projectId'])
209     == true)
210     {
211         if($this->SampleModel->logAccess(
212         $sampleId, $testId, $timestamp, $amount,
213         $userId, $this->userData['projectId']) !=
214         false)
215         {
216             if($this->SampleModel->
217             subtractCurrentVolume($sampleId, $amount)
218             != false)
219             {
220                 $data['message'] = array(
221                     'type' => 'success',
222                     'icon' => 'check',
223                     'text' => 'The specimen
224                     sample access is successfully recorded'
225                 );
226             }
227             else
228             {
229                 $data['message'] = array(
230                     'type' => 'error',
231                     'icon' => 'ban',
232                     'text' => 'The specimen
233                     sample access is not successfully
234                     recorded'
235                 );
236             }
237         }
238     }
239     else
240     {
241         $data['message'] = array(
242             'type' => 'error',
243             'icon' => 'ban',
244             'text' => 'The specimen sample
245             is not included in the project'
246         );
247     }
248
249     $this->load->view('specimen/access', $data
250 );
251 }
252
253 function logs()
254 {
255     $data['pageTitle'] = "Specimen";
256     $data['pageHeader'] = "Sample Access Logs"
257 ;
258     $data['user'] = $this->UserModel->
259     getUserWithId($this->userData['id']);
260
261     $userId = $this->UserTypeModel->
262     getUserId($this->userData['usertype'
263     ]);
264     $projectId = $this->userData['id'];
265
266     $samples = $this->SampleModel->
267     getSampleAccess($this->userData['
268     projectId']);
269
270     $data['samples'] = $samples;
271     $this->load->view('specimen/logs', $data);
272 }
273
274 function view($sampleId)
275 {
276     $this->load->helper(array('form'));
277     $data['pageTitle'] = "Specimen";
278     $data['pageHeader'] = "View Specimen
279     Sample";
280
281     $sharedProjects = $this->SampleModel->
282     getSharedProjects($sampleId, $this->
283     userData['projectId']);
284     $sampleInfo = $this->SampleModel->
285     getSampleInformation($sampleId, $this->
286     userData['projectId']);
287     $sourceInfo = $this->SourceModel->
288     getSourceInformation($sampleId);
289     $locationInfo = $this->SampleModel->
290     getSampleLocation($sampleId);
291     $testInfo = $this->TestModel->
292     getTestInformation($sampleId);
293
294     $data['projects'] = $this->ProjectModel->
295     getUserProjectsExceptSessionProject(
296     $this->userData['id'], $this->userData['
297     usertypeId'], $this->userData['projectId'
298     ]);
299     $data['specimenTypes'] = $this->
300     SpecimenTypeModel->getAllSpecimenTypes();
301
302     $data['sampleId'] = $sampleId;
303     $data['sharedProjects'] = $sharedProjects;
304     $data['sampleInfo'] = $sampleInfo;
305     $data['sourceInfo'] = $sourceInfo;
306     $data['locationInfo'] = $locationInfo;
307     $data['testInfo'] = $testInfo;
308
309     $this->load->view('specimen/view', $data);
310 }
311
312 function edit($part, $sampleId)
313 {
314     $this->load->helper(array('form'));
315     $data['pageTitle'] = "Specimen";
316     $data['pageHeader'] = "Edit Specimen
317     Sample";
318
319     $sharedProjects = $this->SampleModel->
320     getSharedProjects($sampleId, $this->
321     userData['projectId']);
322     $sampleInfo = $this->SampleModel->
323     getSampleInformation($sampleId, $this->
324     userData['projectId']);
325     $sourceInfo = $this->SourceModel->
326     getSourceInformation($sampleId);
327     $locationInfo = $this->SampleModel->
328     getSampleLocation($sampleId);
329     $testInfo = $this->TestModel->
330     getTestInformation($sampleId);

```

```

282                                     355
283 $data['sharedProjects'] = $sharedProjects; 356
284 $data['sampleInfo'] = $sampleInfo; 357
285 $data['sourceInfo'] = $sourceInfo;
286 $data['locationInfo'] = $locationInfo; 358
287 $data['testInfo'] = $testInfo; 359
288 $data['specimenTypes'] = $this-> 360
    SpecimenTypeModel->getAllSpecimenTypes() 361
289
290 $data['sampleId'] = $sampleId; 362
291 $data['part'] = $part; 363
292 $this->load->view('specimen/edit', $data); 364
293 }
294
295 function update($part, $sampleId) 366
296 { 367
297     $this->load->helper(array('form')); 368
298     $data['pageTitle'] = "Specimen"; 369
299     $data['pageHeader'] = "View Sample"; 370
300     switch($part) 371
301     { 372
302         case 1: 373
303             $barcode = $this->input->post(' 374
    barcode'); 375
304             $collectionDate = $this->input->post( 376
    ('collectionDate')); 377
305             $originalVolume = $this->input->post( 378
    ('originalVolume')); 379
306             $currentVolume = $this->input->post( 380
    'currentVolume'); 381
307             $specimenTypeId = $this->input->post( 382
    ('specimentype')); 383
308             if($this->SampleModel-> 384
    updateSampleInfo($sampleId, $barcode, 385
    $collectionDate, $originalVolume,
    $currentVolume, $specimenTypeId) != false) 386
309             { 387
310                 $data['message'] = array( 388
311                     'type' => 'success', 389
312                     'icon' => 'check', 390
313                     'text' => 'The specimen 391
    sample information is successfully
    updated'
314                 ); 392
315                 $log = 'updated specimen sample ( 393
    '$barcode.' )'; 394
316                 $this->submitSystemLog($log); 395
317             } 396
318             else 397
319             { 398
320                 $data['message'] = array( 399
321                     'type' => 'error', 400
322                     'icon' => 'ban', 401
323                     'text' => 'The specimen 402
    sample information is not successfully
    updated'
324                 ); 403
325             } 404
326             break; 405
327         case 2: 406
328             $firstname = $this->input->post(' 407
    firstname'); 408
329             $lastname = $this->input->post(' 409
    lastname'); 410
330             $sex = $this->input->post('sex'); 411
331             $birthdate = $this->input->post(' 412
    birthdate'); 413
332             $hospitalName = $this->input->post( 414
    $hospitalName); 415
333             $sourceId = $this->SampleModel-> 416
    getSourceId($sampleId); 417
334             if($this->SourceModel->updateSource( 418
    $sourceId, $firstname, $lastname, $sex, 419
    $birthdate, $hospitalName) != false) 420
335             { 421
336                 $data['message'] = array( 422
337                     'type' => 'success', 423
338                     'icon' => 'check', 424
339                     'text' => 'The source 425
    information is successfully updated'
340                 ); 426
341                 $barcode = $this->SampleModel-> 427
    getSampleBarcode($sampleId); 428
342                 $log = 'updated specimen sample ( 429
    '$barcode.' )';
343                 $this->submitSystemLog($log);
344             }
345             else
346             {
347                 $data['message'] = array(
348                     'type' => 'error',
349                     'icon' => 'ban',
350                     'text' => 'The source
    information is not successfully updated.
    The slot you have chosen is already
    occupied.'
351                 );
352             }
353         }
354     }

```

```

430 }
431
432 $sharedProjects = $this->SampleModel->
    getSharedProjects($sampleId, $this->
    userData['projectId']);
433 $sampleInfo = $this->SampleModel->
    getSampleInformation($sampleId, $this->
    userData['projectId']);
434 $sourceInfo = $this->SourceModel->
    getSourceInformation($sampleId);
435 $locationInfo = $this->SampleModel->
    getSampleLocation($sampleId);
436 $testInfo = $this->TestModel->
    getTestInformation($sampleId);
437
438 $data['sampleId'] = $sampleId;
439 $data['sharedProjects'] = $sharedProjects;
440 $data['sampleInfo'] = $sampleInfo;
441 $data['sourceInfo'] = $sourceInfo;
442 $data['testInfo'] = $testInfo;
443 $data['locationInfo'] = $locationInfo;
444
445 $data['projects'] = $this->ProjectModel->
    getUserProjectsExceptSessionProject(
    $this->userData['id'], $this->userData['
    usertypeId'], $this->userData['projectId'
    ]);
446 $data['specimenTypes'] = $this->
    SpecimenTypeModel->getAllSpecimenTypes();
447
448 $this->load->view('specimen/view', $data);
449 }
450
451 function submitSystemLog($log)
452 {
453     date_default_timezone_set('Asia/Manila');
454     $datestring = "%Y-%m-%d %h:%i:%s";
455     $timestamp = mdate($datestring, time());
456
457     $this->SystemLogModel->insertSystemLog(
    $timestamp, $log, $this->userData['id']);
458 }
459 }
460 ?>

```

Listing 15: SpecimenTypeModel.php

```

1 <?php
2 class SpecimenTypeModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7     }
8
9     function getAllSpecimenTypes()
10    {
11        $query = $this->db->get('specimen_type');
12
13        if($query->num_rows() > 0)
14        {
15            return $query->result();
16        }
17        else
18        {
19            return false;
20        }
21    }
22
23    function getSpecimenTypeIdWithName($name)
24    {
25        $query = $this->db
26            ->where('name', $name )
27            ->limit(1)
28            ->get('specimen_type');
29
30        if($query->num_rows() > 0)
31        {
32            return $query->row()->id;
33        }
34        else
35        {
36            return false;
37        }
38    }
39
40    function insertNewSpecimenType(
    $specimenTypeName, $unit)
41    {
42        $data = array(
43            'name' => $specimenTypeName,
44            'unit' => $unit
45        );
46
47        $isSuccess = $this->db->insert('
    specimen_type', $data);
48        return $isSuccess;
49    }
50 }
51 ?>

```

Listing 16: SystemLogModel.php

```

1 <?php
2 class SystemLogModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7     }
8
9     function getSystemLogs()
10    {
11        $query = $this->db
12            ->select('*')
13            ->from('system_log')
14            ->join('user', 'user.id =
    system_log.user_id')
15            ->get();
16
17        if($query->num_rows() > 0)
18        {
19            return $query->result();
20        }
21        else
22        {
23            return false;
24        }
25    }
26
27    function insertSystemLog($timestamp, $log,
    $userId)
28    {
29        $data = array(
30            'timestamp' => $timestamp,
31            'log' => $log,
32            'user_id' => $userId
33        );
34
35        $isSuccess = $this->db->insert('system_log
    ', $data);
36
37        if($isSuccess)
38        {
39            return $this->db->insert_id();
40        }
41        else
42        {
43            return false;
44        }
45    }
46 }
47 ?>

```

Listing 17: SystemLogs.php

```

1 <?php
2 class SystemLogs extends CI_Controller
3 {
4     private $userData;
5
6     function __construct()
7     {
8         parent::__construct();
9         $this->load->model('SystemLogModel', '',
    TRUE);
10
11        $this->load->helper(array('form'));
12        $this->userData = $this->session->userdata
    ('logged_in');
13
14        if( $this->userData == null )
15        {
16            redirect('authenticate/login');
17        }
18    }
19
20    function index()
21    {
22        $data['pageTitle'] = "";
23        $data['pageHeader'] = "Audit Trail";
24
25        $systemLogs = $this->SystemLogModel->
    getSystemLogs();
26        $data['systemLogs'] = $systemLogs;
27
28        $this->load->view('systemlogs/index',
    $data);
29    }
30
31 }
32 ?>

```

## Listing 18: TestModel.php

```

1 <?php
2 class TestModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7     }
8
9     function getAllTests()
10    {
11        $query = $this->db->get('test');
12
13        if($query->num_rows() > 0)
14        {
15            return $query->result();
16        }
17        else
18        {
19            return false;
20        }
21    }
22
23    function getTestInformation($sampleId)
24    {
25        $this->db->select("sample_has_test.id,
26            test.name, sample_has_test.amount,
27            sample_has_test.notes, sample_has_test.
28            result, sample_has_test.user_id");
29        $this->db->where("sample_has_test.
30            sample_id = $sampleId");
31        $this->db->where("test.id =
32            sample_has_test.test_id");
33        $this->db->from("sample_has_test, test");
34        $query = $this->db->get();
35
36        if($query->num_rows() > 0)
37        {
38            return $query->result();
39        }
40        else
41        {
42            return false;
43        }
44    }
45
46    function getTestsOfSample($sampleId)
47    {
48        $this->db->select("sample_has_test.id");
49        $this->db->from("sample_has_test");
50        $this->db->where("sample_has_test.
51            sample_id = $sampleId");
52        $query = $this->db->get();
53
54        if($query->num_rows() > 0)
55        {
56            return $query->result();
57        }
58        else
59        {
60            return false;
61        }
62    }
63
64    function updateResultOfTest($sampletestId,
65        $result)
66    {
67        $this->db
68            ->set('result', $result)
69            ->where('id', $sampletestId);
70
71        $isSuccess = $this->db->update('
72            sample_has_test');
73        return $isSuccess;
74    }
75
76    function updateNotesOfTest($sampletestId,
77        $notes)
78    {
79        $this->db
80            ->set('notes', $notes)
81            ->where('id', $sampletestId);
82
83        $isSuccess = $this->db->update('
84            sample_has_test');
85        return $isSuccess;
86    }
87 }
88 ?>

```

## Listing 19: UserModel.php

```

1 <?php
2 class UserModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7     }
8
9     function assignUserToProject($userId,
10        $projectId)
11    {
12        $data = array(
13            'user_type_id' => $userId,
14            'user_id' => $userId,
15            'project_id' => $projectId
16        );
17
18        $isSuccess = $this->db->insert('
19            user_profile', $data);
20        return $isSuccess;
21    }
22
23    function updateProjectHead($projectId,
24        $newProjectHeadUserId)
25    {
26        $isSuccess = $this->db
27            ->set('user_id',
28                $newProjectHeadUserId)
29            ->where('project_id', $projectId)
30            ->where('user_type_id', 2)
31            ->update('user_profile');
32        return $isSuccess;
33    }
34
35    function removeResearcher($projectId,
36        $researcherUserId)
37    {
38        $isSuccess = $this->db
39            ->where('project_id', $projectId)
40            ->where('user_type_id', 1)
41            ->where('user_id',
42                $researcherUserId)
43            ->delete('user_profile');
44        return $isSuccess;
45    }
46
47    function insertNewUser($username, $password,
48        $firstName, $lastName, $email, $sex,
49        $birthdate, $isActive, $isSysAdmin)
50    {
51        $data = array(
52            'username' => $username,
53            'password' => $password,
54            'firstname' => $firstName,
55            'lastname' => $lastName,
56            'email' => $email,
57            'sex' => $sex,
58            'birthdate' => $birthdate,
59            'is_active' => $isActive,
60            'is_sysadmin' => $isSysAdmin
61        );
62
63        $isSuccess = $this->db->insert('user',
64            $data);
65        return $isSuccess;
66    }
67
68    function updateUser($userId, $username,
69        $password, $firstName, $lastName, $email,
70        $sex, $birthdate, $isActive)
71    {
72        $data = array(
73            'username' => $username,
74            'password' => md5($password),
75            'firstname' => $firstName,
76            'lastname' => $lastName,
77            'email' => $email,
78            'sex' => $sex,
79            'birthdate' => $birthdate,
80            'is_active' => $isActive
81        );
82
83        $this->db->where('id', $userId);
84        $isSuccess = $this->db->update('user',
85            $data);
86        return $isSuccess;
87    }
88
89    function updateUsername($userId,
90        $newUsername)
91    {
92        $this->db
93            ->set('username', $newUsername)
94            ->where('id', $userId);
95
96        $isSuccess = $this->db->update('user');
97        return $isSuccess;
98    }
99
100    function updatePassword($userId,
101        $newPassword)

```

```

88 {
89     $this->db
90     ->set('password', md5($newPassword))
91     ->where('id', $userId);
92
93     $isSuccess = $this->db->update('user');
94     return $isSuccess;
95 }
96
97 function updateFirstName($userId,
98     $newFirstname)
99 {
100     $this->db
101     ->set('firstname', $newFirstname)
102     ->where('id', $userId);
103
104     $isSuccess = $this->db->update('user');
105     return $isSuccess;
106 }
107
108 function updateLastName($userId,
109     $newLastname)
110 {
111     $this->db
112     ->set('lastname', $newLastname)
113     ->where('id', $userId);
114
115     $isSuccess = $this->db->update('user');
116     return $isSuccess;
117 }
118
119 function updateEmail($userId, $newEmail)
120 {
121     $this->db
122     ->set('email', $newEmail)
123     ->where('id', $userId);
124
125     $isSuccess = $this->db->update('user');
126     return $isSuccess;
127 }
128
129 function updateBirthdate($userId,
130     $newBirthdate)
131 {
132     $this->db
133     ->set('birthdate', $newBirthdate)
134     ->where('id', $userId);
135
136     $isSuccess = $this->db->update('user');
137     return $isSuccess;
138 }
139
140 function updateSex($userId, $newSex)
141 {
142     $this->db
143     ->set('sex', $newSex)
144     ->where('id', $userId);
145
146     $isSuccess = $this->db->update('user');
147     return $isSuccess;
148 }
149
150 function activateUser($userId)
151 {
152     $this->db
153     ->set('is_active', 1)
154     ->where('id', $userId);
155
156     $isSuccess = $this->db->update('user');
157     return $isSuccess;
158 }
159
160 function deactivateUser($userId)
161 {
162     $this->db
163     ->set('is_active', 0)
164     ->where('id', $userId);
165
166     $isSuccess = $this->db->update('user');
167     return $isSuccess;
168 }
169
170 function getAllUsers()
171 {
172     $query = $this->db->get('user');
173
174     if($query->num_rows() > 0)
175     {
176         return $query->result();
177     }
178     else
179     {
180         return false;
181     }
182 }
183
184 function getUserWithId($userId)
185 {
186     $query = $this->db
187
188     ->where('id', $userId )
189     ->limit(1)
190     ->get('user');
191
192     if($query->num_rows() > 0)
193     {
194         return $query->row();
195     }
196     else
197     {
198         return false;
199     }
200 }
201
202 function getAllUsersExceptSysAdmin()
203 {
204     $this->db->select("user.firstname , user.
205     lastname, user.id");
206     $this->db->from("user");
207     $this->db->where("user.is_sysadmin = 'n'
208     ");
209     $query = $this->db->get();
210
211     if($query->num_rows() > 0)
212     {
213         return $query->result();
214     }
215     else
216     {
217         return false;
218     }
219 }
220
221 function getAllUsersExcept($userId)
222 {
223     $this->db->select("user.firstname , user.
224     lastname, user.id");
225     $this->db->from("user");
226     $this->db->where("user.id != $userId");
227     $query = $this->db->get();
228
229     if($query->num_rows() > 0)
230     {
231         return $query->result();
232     }
233     else
234     {
235         return false;
236     }
237 }
238
239 function getPassword($userId)
240 {
241     $query = $this->db
242     ->where('id', $userId )
243     ->limit(1)
244     ->get('user');
245
246     if($query->num_rows() > 0)
247     {
248         return $query->row()->password;
249     }
250     else
251     {
252         return false;
253     }
254 }
255
256 function getUsername($userId)
257 {
258     $query = $this->db->where('id', $userId )
259     ->get('user');
260
261     if($query->num_rows() > 0)
262     {
263         return $query->row()->username;
264     }
265     else
266     {
267         return false;
268     }
269 }
270
271 function getUserFirstName($userId)
272 {
273     $query = $this->db->where('id', $userId )
274     ->get('user');
275
276     if($query->num_rows() > 0)
277     {
278         return $query->row()->firstname;
279     }
280     else
281     {
282         return false;
283     }
284 }
285
286 function getUserLastName($userId)

```



```

278 {
279     $query = $this->db->query("Select lastname
280         from user where id ='$userId'");
281     if($query->num_rows() > 0)
282     {
283         return $query->row()->lastname;
284     }
285     else
286     {
287         return false;
288     }
289 }
290
291 function getUserEmail($userId)
292 {
293     $query = $this->db->query("Select email
294         from user where id ='$userId'");
295     if($query->num_rows() > 0)
296     {
297         return $query->row()->email;
298     }
299     else
300     {
301         return false;
302     }
303 }
304
305 function getUserSex($userId)
306 {
307     $query = $this->db->query("Select sex from
308         user where id ='$userId'");
309     if($query->num_rows() > 0)
310     {
311         return $query->row()->sex;
312     }
313     else
314     {
315         return false;
316     }
317 }
318
319 function getUserBirthdate($userId)
320 {
321     $query = $this->db->query("Select
322         birthdate from user where id ='$userId'");
323     if($query->num_rows() > 0)
324     {
325         return $query->row()->birthdate;
326     }
327     else
328     {
329         return false;
330     }
331 }
332
333
334 function getIsActive($userId)
335 {
336     $query = $this->db->query("Select
337         is_active from user where id ='$userId'");
338     if($query->num_rows() > 0)
339     {
340         return $query->row()->is_active;
341     }
342     else
343     {
344         return false;
345     }
346 }
347
348 function isRegisteredUser( $username,
349     $password )
350 {
351     $query = $this->db
352         ->where( 'username', $username )
353         ->where( 'password', md5( $password )
354         )
355         ->limit(1)
356         ->get( 'user' );
357     if( $query->num_rows() > 0 )
358     {
359         return true;
360     }
361     else
362     {
363         return false;
364     }
365 }
366
367 function isSamePassword($userId,
368     $newPassword)
369 {
370     $query = $this->db
371         ->where( 'id', $userId )
372         ->where( 'password', md5( $newPassword )
373         )
374         ->from( 'user' );
375     if( $query->get()->num_rows() > 0 )
376     {
377         return true;
378     }
379     else
380     {
381         return false;
382     }
383 }
384
385 function isSystemAdmin( $username, $password )
386 {
387     $query = $this->db
388         ->where( 'username', $username )
389         ->where( 'password', md5(
390         $password ) )
391         ->where( 'is_active', 1 )
392         ->where( 'is_sysadmin', 1 )
393         ->from( 'user' );
394     if( $query->get()->num_rows() > 0 )
395     {
396         return true;
397     }
398     else
399     {
400         return false;
401     }
402 }
403
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993 }
994 }
995 }
996 }
997 }
998 }
999 }
1000 }

```

## Listing 20: Users.php

```

1 <?php
2 class Users extends CI_Controller
3 {
4     function __construct()
5     {
6         parent::__construct();
7         $this->load->model('ProjectModel', '', TRUE);
8         $this->load->model('UserModel', '', TRUE);
9         $this->load->model('UserTypeModel', '', TRUE);
10        $this->load->model('SystemLogModel', '', TRUE);
11    }
12    $this->userData = $this->session->userdata
13        ('logged_in');
14    if( $this->userData == null )
15    {
16        redirect('authenticate/login');
17    }
18 }
19
20 function index()
21 {
22     $data['pageTitle'] = "Users";
23     $data['pageHeader'] = "User List";
24
25     $data['users'] = $this->UserModel->
26         getAllUsers();
27     $this->load->view('user/index', $data);
28 }
29
30 function create()
31 {
32     $this->load->helper(array('form'));
33     $data['pageTitle'] = "Users";
34     $data['pageHeader'] = "New User";
35
36     $data['userTypes'] = $this->UserTypeModel
37         ->getUserTypes();
38     $this->load->view('user/create', $data);
39 }
40
41 function insert()
42 {
43     $this->load->helper(array('form'));
44
45     $data['pageTitle'] = "Users";
46     $data['pageHeader'] = "New User";
47
48     $username = $this->input->post('username');
49     $password = $this->input->post('password');
50     $firstname = $this->input->post('firstName');
51     $lastname = $this->input->post('lastName');
52 }

```

```

50 $emailAddress = $this->input->post('
    emailAd');
51 $birthdate = $this->input->post('birthdate');
52 $sex = $this->input->post('sex');
53 $isActive = '1';
54
55 if($this->UserModel->insertNewUser(
    $username, md5($password), $firstname,
    $lastname, $emailAddress, $sex,
    $birthdate, $isActive, 'n'))
56 {
57     $username = $this->UserModel->
    getUsername($this->userData['id']);
58     $log = 'added user ('.$username.')';
59     $this->submitSystemLog($log);
60
61     $data['message'] = array(
62         'type' => 'success',
63         'icon' => 'check',
64         'text' => 'You have successfully
        added a new user'
65     );
66
67     $data['userTypes'] = $this->UserTypeModel->
    getUserTypes();
68     $this->load->view('user/create', $data);
69 }
70
71
72
73 function activate($uid)
74 {
75     $this->load->helper(array('form'));
76     $data['username'] = $this->userData['
    username'];
77     $data['firstname'] = $this->userData['
    firstname'];
78     $data['fullname'] = $this->userData['
    fullname'];
79     $userId = $this->userData['id'];
80
81     $data['pageTitle'] = "Users";
82     $data['pageHeader'] = "Users List";
83
84     $username = $this->UserModel->getUsername(
    $uid);
85     if($this->UserModel->activateUser($uid))
86     {
87         $log = 'activated user ('.$username.')
            ';
88         $this->submitSystemLog($log);
89
90         $data['users'] = $this->UserModel->
    getAllUsers();
91         $this->load->view('user/index', $data);
92     }
93 }
94
95 function deactivate($uid)
96 {
97     $this->load->helper(array('form'));
98
99     $data['pageTitle'] = "Users";
100    $data['pageHeader'] = "Users List";
101
102    $username = $this->UserModel->getUsername(
    $uid);
103    if($this->UserModel->deactivateUser($uid))
104    {
105        $log = 'deactivated user ('.$username.')
            ';
106        $this->submitSystemLog($log);
107
108        $data['users'] = $this->UserModel->
    getAllUsers();
109        $this->load->view('user/index', $data);
110    }
111 }
112
113 function submitSystemLog($log)
114 {
115     date_default_timezone_set('Asia/Manila');
116     $datestring = "%Y-%m-%d %h:%i:%s";
117     $timestamp = mdate($datestring, time());
118     $this->SystemLogModel->insertSystemLog(
    $timestamp, $log, $this->userData['id']);
119 }
120
121 }
122 }
123 }
?>

```

## Listing 21: UserTypeModel.php

```

1 <?php
2 class UserTypeModel extends CI_Model
3 {
4     function __construct()
5     {
6         parent::__construct();
7     }
8
9     function getUserTypes()
10    {
11        $query = $this->db->get('user_type');
12
13        if($query->num_rows() > 0)
14        {
15            return $query->result();
16        }
17        else
18        {
19            return false;
20        }
21    }
22
23    function getUserType($userId)
24    {
25        $this->db->select("name");
26        $this->db->from("user_type");
27        $this->db->where("id = '$userId'");
28        $query = $this->db->get();
29
30        if($query->num_rows() > 0)
31        {
32            return $query->row()->name;
33        }
34        else
35        {
36            return false;
37        }
38    }
39
40    function getUserTypeId($typeName)
41    {
42        $this->db->select("id");
43        $this->db->from("user_type");
44        $this->db->where("name = '$typeName'");
45        $query = $this->db->get();
46
47        if($query->num_rows() > 0)
48        {
49            return $query->row()->id;
50        }
51        else
52        {
53            return false;
54        }
55    }
56 }
57 ?>

```

## Listing 22: Authenticate/login.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BBST | Log in</title>
6 <meta content="width=device-width, initial-
    -scale=1, maximum-scale=1, user-scalable=
    no" name="viewport">
7 <link href="<?php echo base_url("
    public_html/vendor/bootstrap/css/
    bootstrap.css"); ?>" rel="stylesheet"
    type="text/css" />
8 <link href="https://maxcdn.bootstrapcdn.
    com/font-awesome/4.3.0/css/font-awesome.
    min.css" rel="stylesheet" type="text/css"
    />
9 <link href="<?php echo base_url("
    public_html/vendor/adminlte/css/AdminLTE.
    min.css"); ?>" rel="stylesheet" type="
    text/css" />
10 <link href="<?php echo base_url("
    public_html/vendor/plugins/iCheck/square/
    blue.css"); ?>" rel="stylesheet" type="
    text/css" />
11 <!--[if lt IE 9]>
12 <script src="https://oss.maxcdn.com/
    html5shiv/3.7.2/html5shiv.min.js"></
    script>
13 <script src="https://oss.maxcdn.com/
    respond/1.4.2/respond.min.js"></script>
14 <![endif-->
15 </head>
16 <body class="login-page">
17 <div class="login-box">
18 <div class="login-logo">
19 <a href="#"><b>IMBB Biobank</b><br/>
    Specimen Sample Monitoring System</a>

```

```

20     </div>
21
22     <div class="login-box-body">
23         <span class="col-xs-4">
24             
" width="100px" margin="30px"></img>
25         </span>
26         <span class="col-xs-4">
27             
width="80px" margin="30px"></img>
28         </span>
29         <span class="">
30             52
" width="90px" margin="30px"></img>
31         </span>
32     </div>
33     <div class="login-box-body">
34         <?php if( validation_errors() != false55
) : ?>
35         <div class="alert alert-danger alert57
-dismissable">
36             <button type="button" class="close59
" data-dismiss="alert" aria-hidden="true"
> </button>
37             <h4><i class="icon fa fa-ban"></i>60
Alert!</h4>
38             <?php echo validation_errors(); ?>
39         </div>
40         <?php endif; ?>
41         <?php echo form_open('authenticate/
login'); ?>
42         <div class="form-group has-feedback"
>
43             <input name="username" type="text"62
class="form-control" placeholder="
Username"/>
44             <span class="glyphicon glyphicon-
user form-control-feedback"></span>
45         </div>
46         <div class="form-group has-feedback"
>
47             <input name="password" type="
password" class="form-control"
placeholder="Password"/>
48             <span class="glyphicon glyphicon-
lock form-control-feedback"></span>
49         </div>
50         <div class="row">
51             <div class="col-xs-4 col-xs-offset
-4">
52                 <button type="submit" class="btn
btn-primary btn-block btn-flat">Log In</
button>
53             </div>
54         </div>
55         <?php echo form_close(); ?>
56     </div>
57 </div>
58
59 <script src="<?php echo base_url("
public_html/vendor/plugins/jquery/jquery
-2.1.4.min.js"); ?>"></script>
60 <script src="<?php echo base_url("
public_html/vendor/bootstrap/js/bootstrap
.min.js"); ?>" type="text/javascript"></
script>
61 <script src="<?php echo base_url("
public_html/vendor/plugins/iCheck/ichack.
min.js"); ?>" type="text/javascript"></
script>
62 </body>
63 </html>

```

### Listing 23: Dashboard/home.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4     <meta charset="UTF-8">
5     <title>IMBB BSSMS | Dashboard</title>
6     <meta content="width=device-width, initial-
scale=1, maximum-scale=1, user-scalable=
no" name="viewport">
7     <link href="<?php echo base_url("public_html
/vendor/bootstrap/css/bootstrap.css"); ?>
" rel="stylesheet" type="text/css" />
8     <link href="https://maxcdn.bootstrapcdn.com/
font-awesome/4.3.0/css/font-awesome.min.
css" rel="stylesheet" type="text/css" />
9     <link href="https://code.ionicframework.com/40
ionicons/2.0.1/css/ionicons.min.css" rel=41
"stylesheet" type="text/css" />
10    <link href="<?php echo base_url("public_html
/vendor/plugins/datatables/dataTables.
bootstrap.css"); ?>" rel="stylesheet"
type="text/css" />
11    <link href="<?php echo base_url("public_html43
/vendor/adminlte/css/AdminLTE.min.css");
?>" rel="stylesheet" type="text/css" />
12    <link href="<?php echo base_url("public_html45
/vendor/plugins/iCheck/square/blue.css");47
?>" rel="stylesheet" type="text/css" />
13    <link href="<?php echo base_url("public_html48
/vendor/adminlte/css/skins/skin-blue.css"49
); ?>" rel="stylesheet" type="text/css"
/>
14    <link href="<?php echo base_url("public_html50
/assets/css/system.css"); ?>" rel="
stylesheet" type="text/css" />
15    <!--[if lt IE 9]>
16    <script src="https://oss.maxcdn.com/
html5shiv/3.7.2/html5shiv.min.js"></
script>
17    <script src="https://oss.maxcdn.com/respond
/1.4.2/respond.min.js"></script>
18    <![endif]-->
19 </head>
20
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23     <header class="main-header">
24         <a href="<?= base_url('dashboard');?>" class=58
" logo">
25         <span class="logo-mini"><b>BSS</b></span>59
60
26         <span class="logo-lg"><b>IMBB BSSMS</b></62
span>
27     </a>
28
29     <nav class="navbar navbar-static-top" role="65
navigation">
30         <a href="#" class="sidebar-toggle" data-68
toggle="offcanvas" role="button">
31         <span class="sr-only">Toggle navigation
32     </span>
33     </a>
34     <div class="navbar-custom-menu">
35         <ul class="nav navbar-nav">
36             <li class="dropdown user user-menu">
37                 <a href="#" class="dropdown-toggle"
data-toggle="dropdown">
38                     " class="user-image" alt="User
Image"/>
39                     <span class="hidden-xs"><?=$this
->session->userdata('logged_in')[
'firstname']; ?></span>
40                 </a>
41                 <ul class="dropdown-menu">
42                     <li class="user-header">
43                         " class="img-circle" alt="User
Image" />
44                         <p>
45                             <?=$this->session->userdata('
logged_in')[ 'fullname']; ?>
46                         </p>
47                     </li>
48                     <li class="user-footer">
49                         <div class="col-xs-4 text-center
">
50                             <a href="<?= base_url('
dashboard');?>" class="btn btn-default
btn-flat">Dashboard</a>
51                         </div>
52                         <div class="col-xs-4 text-center
">
53                             <a href="<?= base_url('profile
');?>" class="btn btn-default btn-flat">
Profile</a>
54                         </div>
55                         <div class="col-xs-4 text-center
">
56                             <a href="<?= base_url('
authenticate/logout');?>" class="btn btn-
default btn-flat">Sign out</a>
57                         </div>
58                     </li>
59                 </ul>
60             </li>
61             <li>
62                 <a href="#" data-toggle="control-
sidebar"><i class="fa fa-gears"></i></a>
63             </li>
64         </ul>
65     </div>
66 </nav>
67 </header>
68 <aside class="main-sidebar">
<section class="sidebar">

```

```

69     <div class="user-panel">
70         <div class="pull-left image">
71             "
                class="img-circle" alt="User Image" />
72         </div>
73         <div class="pull-left info">
74             <p><?= $this->session->userdata('
                logged_in')[ 'fullname' ]; ?></p>
75         </div>
76     </div>
77 </section>
78 </aside>
79
80 <div class="content-wrapper">
81     <section class="content-header">
82         <h1>
83             <?php echo $pageHeader; ?>
84             <small></small>
85         </h1>
86         <ol class="breadcrumb">
87             <li><a href="#"><i class="fa fa-
                dashboard"></i> <?php echo $pageTitle;
                ?></a></li>
88             <li class="active"><?php echo
                $pageHeader; ?></li>
89         </ol>
90     </section>
91
92     <section class="content">
93         <div class="row">
94             <div class="col-xs-12">
95                 <div class="box">
96                     <div class="box-header">
97                         <h3 class="box-title">Projects </h3>
98                     </div>
99                     <div class="box-body">
100                        <table id="example1" class="table
                            table-bordered table-hover">
101                            <thead>
102                                <tr>
103                                    <th>Project Name</th>
104                                    <th>Role</th>
105                                </tr>
106                            </thead>
107                            <tbody>
108                                <?php if( $projects != null ) :
109                                    <?php foreach($projects as $row)
110                                        <tr>
111                                            <td><a href="<?= base_url('
                            singleproject/start/'. $row->pid . '/' . $row
                            ->utid); ?>"><?= $row->pname?></a></td>
112                                            <td><?= $row->utname?></td>
113                                        </tr>
114                                    <?php endforeach; ?>
115                                    <?php else: ?>
116                                        <tr>
117                                            <td>no available data</td>
118                                        </tr>
119                                </tbody>
120                            </table>
121                        </div>
122                    </div>
123                </div>
124                <table>
125                    <tr>
126                        <th>Project Name</th>
127                        <th>Role</th>
128                    </tr>
129                </table>
130            </div>
131        </div>
132    </section>
133 </div>
134 <div class="main-footer">
135     <div class="pull-right hidden-xs">
136         <strong>Copyright &copy; 2015 <a href="#">
137             IMBB</a></strong> All rights reserved.
138     </div>
139     " width="35px"
140     ></img>
141     " width="35
                px"></img>
142     " width="35
                px"></img>
143 </div>
144 </div>
145
146 <script src="<?php echo base_url("public_html/
                vendor/plugins/jquery/jquery-2.1.4.min.js
                "); ?>"></script>
147 <script src="<?php echo base_url("public_html/
                vendor/bootstrap/js/bootstrap.min.js");
                ?>" type="text/javascript"></script>
148 <script src="<?php echo base_url("public_html/
                vendor/adminlte/js/app.min.js"); ?>" type
                ="text/javascript"></script>
149 <script src="<?php echo base_url("public_html/
                vendor/plugins/datatables/jquery.
                dataTables.min.js"); ?>" type="text/
                javascript"></script>
150 <script src="<?php echo base_url("public_html/
                vendor/plugins/datatables/dataTables.
                bootstrap.min.js"); ?>" type="text/
                javascript"></script>
151 <script>
152     $(document).ready(function() {
153         $('#example1').DataTable();
154     });
155 </script>
156 </script>
157 </body>
158 </html>

```

Listing 24: Dashboard-  
/home\_admin.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4     <meta charset="UTF-8">
5     <title>IMBB BSSMS | Dashboard</title>
6     <meta content="width=device-width, initial-
            scale=1, maximum-scale=1, user-scalable=
            no" name="viewport">
7     <link href="<?php echo base_url("public_html
            /vendor/bootstrap/css/bootstrap.css"); ?>"
            rel="stylesheet" type="text/css" />
8     <link href="https://maxcdn.bootstrapcdn.com/
            font-awesome/4.3.0/css/font-awesome.min.
            css" rel="stylesheet" type="text/css" />
9     <link href="https://code.ionicframework.com/
            2.0.1/css/ionic.min.css" rel="
            stylesheet" type="text/css" />
10    <link href="<?php echo base_url("public_html
            /vendor/bootstrap/css/font-awesome.css");
            ?>" rel="stylesheet" type="text/css" />
11    <link href="<?php echo base_url("public_html
            /vendor/plugins/datatables/dataTables.
            bootstrap.css"); ?>" rel="stylesheet"
            type="text/css" />
12    <link href="<?php echo base_url("public_html
            /vendor/adminlte/css/AdminLTE.min.css");
            ?>" rel="stylesheet" type="text/css" />
13    <link href="<?php echo base_url("public_html
            /vendor/plugins/iCheck/square/blue.css");
            ?>" rel="stylesheet" type="text/css" />
14    <link href="<?php echo base_url("public_html
            /vendor/adminlte/css/skins/skin-blue.
            css"); ?>" rel="stylesheet" type="text/css"
15 ></link>
16 <!--[if lt IE 9]>
17 <script src="https://oss.maxcdn.com/
            html5shiv/3.7.2/html5shiv.min.js"></
            script>
18 <script src="https://oss.maxcdn.com/respond
            /1.4.2/respond.min.js"></script>
19 <![endif]-->
20 </head>
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23 <header class="main-header">
24 <a href="<?= base_url('dashboard'); ?>" class
25 ="logo">
26 <span class="logo-mini"><b>BSS</b></span>
27 <span class="logo-lg"><b>IMBB BSSMS</b></span>
28 </a>
29 <nav class="navbar navbar-static-top" role="
            navigation">
30 <a href="#" class="sidebar-toggle" data-
            toggle="offcanvas" role="button">
31 <span class="sr-only">Toggle navigation
32 </span>
33 </a>
34 <div class="navbar-custom-menu">
35 <ul class="nav navbar-nav">
36 <li class="dropdown user user-menu">
37 <a href="#" class="dropdown-toggle"
38 data-toggle="dropdown">
39 " class="user-image" alt="User
Image"/>
38 <span class="hidden-xs"><?=$this
->session->userdata('logged_in')[
firstname']; ?></span>
39 </a>
40 <ul class="dropdown-menu">
41 <li class="user-header">
42 " class="img-circle" alt="User 87
Image" /> </li>
43 <p>
44 <?=$this->session->userdata(' 90
logged_in')[ 'fullname']; ?>
45 <small style="color:#00c0ef;" 91
><?=( $this->session->userdata('logged_in 92
')[ 'is_sysadmin'] ? 'System Administrator 93
': '' ) ?></small>
46 </p>
47 </li>
48 <li class="user-footer">
49 <div class="pull-right">
50 <a href="<?= base_url('
authenticate/logout');?>" class="btn btn-401
default btn-flat">Sign out</a>
51 </div>
52 </li>
53 </ul>
54 </li>
55 <li>
56 <a href="#" data-toggle="control- 105
sidebar"><i class="fa fa-gears"></i></a> 106
57 </li>
58 </ul>
59 </div>
60 </nav>
61 </header>
62 <aside class="main-sidebar">
63 <section class="sidebar">
64 <div class="user-panel">
65 <div class="pull-left image">
66 "
class="img-circle" alt="User Image" />
67 </div>
68 <div class="pull-left info">
69 <p><?=$this->session->userdata('
logged_in')[ 'fullname']; ?></p>
70 </div>
71 </div>
72 <ul class="sidebar-menu">
73 <li class="header"></li>
74 <li class="treeview">
75 <a href="#"><i class='glyphicon
glyphicon-tasks'></i> <span>Projects </
span></a>
76 <ul class="treeview-menu">
77 <li><a href="<?= base_url('
projects/create');?>"><i class='glyphicon 22
glyphicon-chevron-right'></i>New Project
</a></li>
78 <li><a href="<?= base_url('
projects');?>"><i class='glyphicon
glyphicon-chevron-right'></i>Project List
</a></li>
79 </ul>
80 </li>
81 <li class="treeview">
82 <a href="#"><i class='glyphicon
glyphicon-tasks'></i></i> <span>Users </
span></a>
83 <ul class="treeview-menu">

```

## Listing 25: Profile/edit.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content='width=device-width, initial-
scale=1, maximum-scale=1, user-scalable=
no' name='viewport'>
7 <link href="<?php echo base_url("public_html
/vendor/bootstrap/css/bootstrap.css"); ?>
" rel="stylesheet" type="text/css" />
8 <link href="https://maxcdn.bootstrapcdn.com/16
font-awesome/4.3.0/css/font-awesome.min.
css" rel="stylesheet" type="text/css" />
9 <link href="https://code.ionicframework.com/17
ionicons/2.0.1/css/ionicons.min.css" rel=
"stylesheet" type="text/css" />
10 <link href="<?php echo base_url("public_html
/vendor/plugins/datatables/dataTables.
bootstrap.css"); ?>" rel="stylesheet"
type="text/css" />
11 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/AdminLTE.min.css");
?>" rel="stylesheet" type="text/css" />
12 <link href="<?php echo base_url("public_html
/vendor/plugins/iCheck/square/blue.css");
?>" rel="stylesheet" type="text/css" />
13 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/skins/skin-blue.css"
); ?>" rel="stylesheet" type="text/css"
/>
14 <link href="<?php echo base_url("public_html
/assets/css/system.css"); ?>" rel="
stylesheet" type="text/css" />
15 <!--[if lt IE 9]>
16 <script src="https://oss.maxcdn.com/
html5shiv/3.7.2/html5shiv.min.js"></
script>
17 <script src="https://oss.maxcdn.com/respond
/1.4.2/respond.min.js"></script>
18 <![endif]-->
19 </head>
20 <body class="skin-blue sidebar-mini">
21 <div class="wrapper">

```

```

23 <header class="main-header">
24 <a href="<?= base_url('dashboard');?>" class=90
    ="logo">
25 <span class="logo-mini"><b>BSS</b></span>92
    >
26 <span class="logo-lg"><b>IMBB BSSMS</b></span>93
    </a>
27 </a>
28 <nav class="navbar navbar-static-top" role="96
    navigation">
29 <a href="#" class="sidebar-toggle" data-
    toggle="offcanvas" role="button">
30 <span class="sr-only">Toggle navigation
    </span>
31 </a>
32 <div class="navbar-custom-menu">
33 <ul class="nav navbar-nav">
34 <li class="dropdown user user-menu">
35 <a href="#" class="dropdown-toggle">
36 " class="user-image" alt="User
    Image" />
37 <span class="hidden-xs"><?= $this
    ->session->userdata('logged_in')[
    first_name']; ?></span>
38 </a>
39 <ul class="dropdown-menu">
40 <li class="user-header">
41 " class="img-circle" alt="User
    Image" />
42 <p>
43 <?= $this->session->userdata('logged_in
    '); ?>
44 </p>
45 </li>
46 <li class="user-footer">
47 <div class="col-xs-4 text-center
    ">
48 <a href="<?= base_url('
    dashboard');?>" class="btn btn-default
    btn-flat">Dashboard</a>
49 </div>
50 <div class="col-xs-4 text-center
    ">
51 <a href="<?= base_url('profile
    ');?>" class="btn btn-default btn-flat">
    Profile</a>
52 </div>
53 <div class="col-xs-4 text-center
    ">
54 <a href="<?= base_url('
    authenticate/logout');?>" class="btn btn-
    default btn-flat">Sign out</a>
55 </div>
56 </li>
57 </ul>
58 </li>
59 <li>
60 <a href="#" data-toggle="control-
    sidebar"><i class="fa fa-gears"></i></a>
61 </li>
62 </ul>
63 </div>
64 </nav>
65 </header>
66 <aside class="main-sidebar">
67 <section class="sidebar">
68 <div class="user-panel">
69 <div class="pull-left image">
70 "
    class="img-circle" alt="User Image" />
71 </div>
72 <div class="pull-left info">
73 <p><?= $this->session->userdata('
    logged_in')[ 'fullname']; ?></p>
74 </div>
75 <ul class="sidebar-menu" style="display:
    none">
76 </ul>
77 </div>
78 </section>
79 </aside>
80
81 <div class="content-wrapper">
82 <section class="content-header">
83 <h1>
84 <?php echo $pageHeader; ?>
85 <small></small>
86 </h1>
87 <ol class="breadcrumb">
88 <li><a href="#"><i class="fa fa-
    dashboard"></i> <?php echo $pageTitle;
    ?></a></li>
89 <li class="active"><?php echo
    $pageHeader; ?></li>
</ol>
</section>
</div>
<div class="col-xs-12">
<div class="alert alert-?><?php echo $message
    ['type']; ?> alert-dismissable">
<button type="button" class="close" data-
    dismiss="alert" aria-hidden="true"> </
    button>
<h4><i class="icon fa fa-<?php echo
    $message['icon']; ?>"></i> <?php echo
    $message['text']; ?></h4>
</div>
</div>
<?php endif; ?>
<!-- Main content -->
<section class="content">
<div class="row">
<div class="col-md-12">
<div class="box box-primary">
<div class="box-header">
<h3 class="box-title">User
    Information</h3>
</div>
<?php echo form_open('profile/
    update'); ?>
<div class="box-body">
<div class="col-sm-6 invoice
    -col">
<div class="form-group">
<label for="username">
    Username</label>
<input type="hidden"
    class="form-control" name="userId" value=
    "<?= $user->id ?>"></input>
<input type="text" class
    ="form-control" id="username" name="
    username" placeholder="Enter Username"
    value="<?= $user->username ?>"></input>
</div>
<div class="form-group">
<label for="
    currentPassword">Current Password</label>
<input type="password"
    class="form-control" id="currentPassword"
    name="currentPassword" placeholder="
    Enter Current Password"></input>
</div>
<div class="form-group">
<label for="
    newPassword">New Password</label>
<input type="password"
    class="form-control" id="newPassword"
    name="newPassword" placeholder="Enter New
    Password"></input>
</div>
<div class="form-group">
<label for="
    firstName">First Name</label>
<input type="text" class
    ="form-control" id="firstName" name="
    firstName" placeholder="Enter First Name"
    value="<?= $user->firstname ?>"></input>
</div>
<div class="form-group">
<label for="
    lastName">Last Name</label>
<input type="text" class
    ="form-control" id="lastName" name="
    lastName" placeholder="Enter Last Name"
    value="<?= $user->lastname ?>"></input>
</div>
<div class="col-sm-6 invoice
    -col">
<div class="form-group">
<label for="
    emailAd">Email Address</label>
<input type="email"
    class="form-control" id="emailAd" name="
    emailAd" placeholder="Enter Email Address
    " value="<?= $user->email ?>"></input>
</div>
<div class="form-group">
<label for="
    birthDate">Date of Birth</label>
<input type="date" class
    ="form-control" id="birthDate" name="
    birthDate" value="<?= $user->birthdate ?>
    "></input>
</div>
<div class="form-group">
<label>Sex</label>
<div class="radio">
<label>
<input type="radio"

```

```

    " id="femaleRadio" name="sex" value=" 179
    female" <?=( $user->sex != 'female' ? :
    checked' ) ?>/>
149
150
151
152
153
154
    Female 180
    </label> 181
    </div> 182
    <div class="radio"> 183
    <label> 184
    <input type="radio" 185
    " id="maleRadio" name="sex" value="male" 186
    <?=( $user->sex != 'male' ? : 'checked' 187
    ?>/>
155
156
157
158
159
160
161
    Male 188
    </label> 189
    </div> 190
    </div> 191
    </div> 192
    <center> 193
    <button type="button" 194
    class="btn btn-primary" data-toggle="
    modal" data-target="#myModal">Update</
    button>
162
    <button type="reset" clas 194
    s="btn btn-default">Clear</button>
163
164
165
166
167
168
169
    </center> 195
    </div> 196
    </div> 197
    </div> 198
    <div class="modal fade" id="myModal" 199
    tabindex="-1" role="dialog" aria-
    labelledby="myModalLabel" aria-hidden="
    true">
170
171
172
173
    <div class="modal-dialog">
    <div class="modal-content"> 201
    <div class="modal-header">
    <button type="button" class=
    "close" data-dismiss="modal" aria-label="
    Close"><span aria-hidden="true">&times;</
    span></button> 202
174
    <h4 class="modal-title">Are
    you sure you want to update your profile 203
    ?</h4>
175
176
177
178
    </div>
    <div class="modal-footer"> 204
    <button type="submit" class= 205
    " btn btn-primary">Update</button> 206

```

## Listing 26: Profile/index.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content="width=device-width, initial-
  scale=1, maximum-scale=1, user-scalable=
  no" name="viewport">
7 <link href="<?php echo base_url("public_html
  /vendor/bootstrap/css/bootstrap.css"); ?>
  " rel="stylesheet" type="text/css" /> 30
8 <link href="https://maxcdn.bootstrapcdn.com/32
  font-awesome/4.3.0/css/font-awesome.min.
  css" rel="stylesheet" type="text/css" /> 33
9 <link href="https://code.ionicframework.com/35
  ionicons/2.0.1/css/ionicons.min.css" rel=
  "stylesheet" type="text/css" /> 36
10 <link href="<?php echo base_url("public_html
  /vendor/plugins/datatables/dataTables.
  bootstrap.css"); ?>" rel="stylesheet"
  type="text/css" /> 37
11 <link href="<?php echo base_url("public_html
  /vendor/adminlte/css/AdminLTE.min.css");
  ?>" rel="stylesheet" type="text/css" /> 38
12 <link href="<?php echo base_url("public_html
  /vendor/plugins/iCheck/square/blue.css");
  ?>" rel="stylesheet" type="text/css" /> 40
13 <link href="<?php echo base_url("public_html
  /vendor/adminlte/css/skins/skin-blue.css"
  ); ?>" rel="stylesheet" type="text/css"
  /> 41
14 <link href="<?php echo base_url("public_html
  /assets/css/system.css"); ?>" rel="
  stylesheet" type="text/css" /> 42
15 <!--[if lt IE 9]> 44
16 <script src="https://oss.maxcdn.com/
  html5shiv/3.7.2/html5shiv.min.js"></
  script> 45
17 <script src="https://oss.maxcdn.com/respond
  /1.4.2/respond.min.js"></script> 46
18 <![endif]--> 47
19 </head> 49
20
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23 <header class="main-header">
24 <a href="<?=( base_url('dashboard');?>" class
    = "logo">
    <span class="logo-mini"><b>BSS</b></span>
    <b>MS</b></span>
    <span class="logo-lg"><b>IMBB BSSMS</b></
    span>
    </a>
    <nav class="navbar navbar-static-top" role="
    navigation">
    <a href="#" class="sidebar-toggle" data-
    toggle="offcanvas" role="button">
    <span class="sr-only">Toggle navigation
    </span>
    </a>
    <div class="navbar-custom-menu">
    <ul class="nav navbar-nav">
    <li class="dropdown user user-menu">
    <a href="#" class="dropdown-toggle"
    data-toggle="dropdown">
    " class="user-image" alt="User
    Image"/>
    <span class="hidden-xs"><?=( $this
    ->session->userdata('logged_in')[
    'firstname']; ?></span>
    </a>
    <ul class="dropdown-menu">
    <li class="user-header">
    " class="img-circle" alt="User
    Image" />
    <p>
    <?=( $this->session->userdata('
    logged_in')[ 'fullname']; ?>
    </p>
    </li>
    <li class="user-footer">
    <div class="col-xs-4 text-center">
    <a href="<?=( base_url('
    dashboard');?>" class="btn btn-default
    btn-flat">Dashboard</a>
    </div>
    <div class="col-xs-4 text-center">
    <a href="<?=( base_url('profile
    ');?>" class="btn btn-default btn-flat">

```

```

52     Profile </a>                                112
53     </div>                                     113
54     <div class="col-xs-4 text-center"          114
55     >>                                         115
56     <a href="<?= base_url('                    116
57     authenticate/logout ');?>" class="btn btn-117
58     default btn-flat">Sign out</a>            118
59     </div>                                     119
60     </li>                                       120
61     </ul>                                       121
62     </div>                                       122
63     </nav>                                       123
64 </header>                                       124
65 <aside class="main-sidebar">
66 <section class="sidebar">
67 <div class="user-panel">
68 <div class="pull-left image">
69 "        126
71 class="img-circle" alt="User Image" />        127
72 </div>
73 <div class="pull-left info">
74 <p><?= $this->session->userdata('              128
75 logged_in') ['fullname']; ?></p>             129
76 </div>                                         130
77 <ul class="sidebar-menu">
78 <li>
79 </li>
80 </ul>
81 </section>
82 <section class="content-header">
83 <h1>
84 <?php echo $pageHeader; ?>
85 <small></small>
86 </h1>
87 <ol class="breadcrumb">
88 <li><a href="#"><i class="fa fa-
89 dashboard"></i></a> <?php echo $pageTitle;
90 </li>
91 <li class="active"><?php echo
92 $pageHeader; ?></li>
93 </ol>
94 </section>
95 <?php if ( isset( $message ) ) : ?>
96 <div class="col-xs-offset-0 col-xs-12">
97 <div class="alert alert-<?=( $message['type
98 '])?> alert-dismissable">
99 <button type="button" class="close" data-148
100 dismiss="alert" aria-hidden="true"> </
101 button>
102 <h4><i class="icon fa fa-<?=( $message['
103 icon'])?>"></i> <?php echo $message['tex150
104 t']; ?></h4>
105 </div>
106 </div>
107 <?php endif; ?>
108 <!-- Main content -->
109 <section class="content">
110 <div class="row">
111 <div class="col-xs-12">
112 <div class="box">
113 <div class="box-header with-border">
114 <h3 class="box-title">User Profile
115 </h3>
116 </div>
117 <div class="box-body" style="margin-155
118 left:25%;>
119 <div class="form-group">
120 <label for="username">Username:
121 </label><span style="margin-left:10%;>
122 <?=$user->username?></span>
123 </div>
124 <div class="form-group">
125 <label for="firstName">First
126 Name: </label><span style="margin-left
127 :10%;> <?=$user->firstName?></span>
128 </div>
129 <div class="form-group">
130 <label for="lastName">Last Name:
131 </label><span style="margin-left:10%;>
132 <?=$user->lastName?></span>
133 </div>
134 <div class="form-group">
135 <label for="emailAd">Email Address
136 : </label><span style="margin-left:7.5%;>
137 > <?=$user->email?></span>
138 </div>
139 <div class="form-group">
140 <label for="birthDate">Date of
141 Birth: </label><span style="margin-left
142 :8.5%;> <?=$user->birthdate?></span>
143 </div>
144 <div class="form-group">
145 <label>Sex: </label><span style="
146 margin-left:15%;> <?=$user->sex?></span>
147 </div>
148 <div class="box-footer">
149 <center><a href="<?= base_url('
150 profile/edit ')?>" class="btn btn-primary"
151 >Edit</a></center>
152 </div>
153 </div>
154 </div>
155 </div>
156 </div>
157 </div>
158 </div>
159 </div>
160 </div>
161 </div>
162 </div>
163 </div>
164 </div>
165 </div>
166 </div>
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202 </div>
203 </div>
204 </div>
205 </div>
206 </div>
207 </div>
208 </div>
209 </div>
210 </div>
211 </div>

```

## Listing 27: Projects/create.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content="width=device-width, initial-
7 scale=1, maximum-scale=1, user-scalable=
8 no" name="viewport">
9 <link href="<?php echo base_url(' public_html13
10 /vendor/bootstrap/css/bootstrap.css"); ?>
11 " rel="stylesheet" type="text/css" />
12 <link href="<?php echo base_url(' public_html14
13 /vendor/plugins/multiselect/css/multi-
14 select.css"); ?>" rel="stylesheet" type="
15 text/css" />
16 <link href="https://maxcdn.bootstrapcdn.com/15
17 font-awesome/4.3.0/css/font-awesome.min.
18 css" rel="stylesheet" type="text/css" />
19 <link href="https://code.ionicframework.com/
20 icons/2.0.1/css/ionic.min.css" rel="
21 stylesheet" type="text/css" />
22 <link href="<?php echo base_url(' public_html
23 /vendor/plugins/datatables/dataTables.
24 bootstrap.css"); ?>" rel="stylesheet"
25 type="text/css" />
26 <link href="<?php echo base_url(' public_html
27 /vendor/adminlte/css/AdminLTE.min.css");
28 ?>" rel="stylesheet" type="text/css" />
29 <link href="<?php echo base_url(' public_html
30 /vendor/plugins/iCheck/square/blue.css");
31 ?>" rel="stylesheet" type="text/css" />
32 <link href="<?php echo base_url(' public_html
33 /vendor/adminlte/css/skins/skin-blue.css"
34 ); ?>" rel="stylesheet" type="text/css"
35 />
36 <link href="<?php echo base_url(' public.html
37 /assets/css/system.css"); ?>" rel="

```



```

16     stylesheet" type="text/css" />
17 <!--[if lt IE 9]>
18 <script src="https://oss.maxcdn.com/html5shiv/3.7.2/html5shiv.min.js"></script>
19 <script src="https://oss.maxcdn.com/respond/1.4.2/respond.min.js"></script>
20 </head>
21
22 <body class="skin-blue sidebar-mini">
23 <div class="wrapper">
24 <header class="main-header">
25 <a href="<?= base_url('dashboard');?>" class="logo">
26 <span class="logo-mini"><b>BSS</b></span>
27 <span class="logo-lg"><b>IMBB BSSMS</b></span>
28 </a>
29 <nav class="navbar navbar-static-top" role="navigation">
30 <a href="#" class="sidebar-toggle" data-toggle="offcanvas" role="button">
31 <span class="sr-only">Toggle navigation
32 </a>
33 <div class="navbar-custom-menu">
34 <ul class="nav navbar-nav">
35 <li class="dropdown user user-menu">
36 <a href="#" class="dropdown-toggle" data-toggle="dropdown">
37 
38 <span class="hidden-xs"><?= $this->session->userdata('logged_in')[ 'firstname' ];?></span>
39 </a>
40 <ul class="dropdown-menu">
41 <li class="user-header">
42 
43 <p>
44 <?= $this->session->userdata('logged_in')[ 'fullname' ];?>
45 <small style="color:#00c0ef;"><?= ($this->session->userdata('logged_in')[ 'is_sysadmin' ] ? 'System Administrator' : '' )?></small>
46 </p>
47 </li>
48 <li class="user-footer">
49 <div class="pull-right">
50 <a href="<?= base_url('authenticate/logout');?>" class="btn btn-default btn-flat">Sign out</a>
51 </div>
52 </li>
53 </ul>
54 </div>
55 <li>
56 <a href="#" data-toggle="control-sidebar"><i class="fa fa-gears"></i></a>
57 </li>
58 </ul>
59 </div>
60 </nav>
61 </header>
62 <aside class="main-sidebar">
63 <section class="sidebar">
64 <div class="user-panel">
65 <div class="pull-left image">
66 
67 </div>
68 <div class="pull-left info">
69 <p><?= $this->session->userdata('logged_in')[ 'fullname' ];?></p>
70 </div>
71 </div>
72 <ul class="sidebar-menu">
73 <li class="header"></li>
74 <li class="active">
75 <a href="#"><i class="glyphicon glyphicon-tasks"></i> <span>Projects </span></a>
76 <ul class="treeview-menu">
77 <li class="active"><a href="<?= base_url('projects/create');?>" class="glyphicon glyphicon-chevron-right"></i> New Project</a></li>
78 <li><a href="<?= base_url('projects');?>" class="glyphicon glyphicon-chevron-right"></i> Project List</li>
79 </ul>
80 </li>
81 <li class="treeview">
82 <a href="#"><i class="glyphicon glyphicon-tasks"></i> <span>Users </span></a>
83 <ul class="treeview-menu">
84 <li><a href="<?= base_url('users/create');?>" class="glyphicon glyphicon-chevron-right"></i> User List</a></li>
85 <li><a href="<?= base_url('users');?>" class="glyphicon glyphicon-chevron-right"></i> User List</a></li>
86 </ul>
87 </li>
88 <li>
89 <a href="<?= base_url('systemlogs');?>" class="glyphicon glyphicon-tasks"></i> <span>Audit Trail</span></a>
90 </li>
91 </ul>
92 </section>
93 </aside>
94
95 <div class="content-wrapper">
96 <section class="content-header">
97 <h1>
98 <?php echo $pageHeader;?>
99 <small></small>
100 </h1>
101 <ol class="breadcrumb">
102 <li><a href="#"><i class="fa fa-dashboard"></i> <?php echo $pageTitle;?></a></li>
103 <li class="active"><?php echo $pageHeader;?></li>
104 </ol>
105 </section>
106 <?php if( isset( $message ) ) :?>
107 <div class="col-xs-offset-0 col-xs-12">
108 <div class="alert alert-<?=( $message['type'] )?> alert-dismissable">
109 <button type="button" class="close" data-dismiss="alert" aria-hidden="true"> </button>
110 <h4><i class="icon fa fa-<?=( $message['icon'] )?>"></i> <?php echo $message['text'];?></h4>
111 </div>
112 </div>
113 </div>
114 <?php endif;?>
115
116 <section class="content">
117 <div class="row">
118 <div class="col-md-12">
119 <div class="box box-primary">
120 <div class="box-header">
121 <h3 class="box-title">Project Information</h3>
122 </div>
123 <?php echo form_open('projects/insert');?>
124 <div class="box-body">
125 <div class="col-sm-6 invoice-col">
126 <div class="form-group">
127 <label for="projectName">Project Name<i class="glyphicon glyphicon-asterisk" style="color:red"></i></label>
128 <input type="text" class="form-control" id="projectName" name="projectName" placeholder="Enter Project Name" required="required">
129 </div>
130 <div class="form-group">
131 <label for="description">Description</label>
132 <textarea class="form-control" id="description" name="description" rows="3" placeholder="Enter Description"></textarea>
133 </div>
134 <div class="form-group">
135 <label for="startDate">Start Date</label>
136 <input type="date" class="form-control" id="startDate" name="startDate">
137 </div>
138 <div class="form-group">
139 <label for="endDate">End Date</label>
140 <input type="date" class="form-control" id="endDate" name="endDate">
141 </div>
142 </div>

```

```

143         <div class="col-sm-6 invoice-col">
144             <div class="form-group">
145                 <label>Project Head<i class="180
glyphicon glyphicon-asterisk" style="
color:red"></i></label>
146                 <select class="form-control" 181
name="projectHead" id="projectHead" 182
required="required"> 183
147                     <option></option> 184
148                     <?php foreach($users as $row 185
):?> 186
149                         <option value="<?=$row->id 187
?>"><?=$row->firstname?> <?=$row-> 188
lastname?></option> 189
150                     <?php endforeach;?> 190
151                 </select> 191
152             </div>
153             <div class="form-group"> 192
154                 <label>Researchers<i class="193
glyphicon glyphicon-asterisk" style="
color:red"></i></label>
155                 <select multiple class="form-194
control" name="researchers[]" id="
researchers" required="required">
156                     <?php foreach($users as $row 195
):?>
157                         <option value="<?=$row->id
?>"><?=$row->firstname?> <?=$row-> 196
lastname?></option> 197
158                     <?php endforeach;?> 198
159                 </select> 199
160             </div>
161         </div>
162     </div>
163     <div class="box-footer">
164         <center>
165             <button type="button" class="btn
btn-primary" data-toggle="modal" data-
target="#projectModal">Add</button>
166             <button type="reset" class="btn
btn-default">Clear</button>
167         </center>
168     </div>
169 </div>
170
171     <div class="modal fade" id="projectModal
" tabindex="-1" role="dialog" aria-
labelledby="myModalLabel" aria-hidden="
true">
172         <div class="modal-dialog">
173             <div class="modal-content">
174                 <div class="modal-header">
175                     <button type="button" class="
close" data-dismiss="modal" aria-label="
Close"><span aria-hidden="true">&times;<
span></button>
176                     <h4 class="modal-title">Are you
sure you want to add this project?</h4>
177                 </div>
178                 <div class="modal-body">
179                     <div class="modal-footer">
<button type="submit" class="btn

```

## Listing 28: Projects/edit.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4     <meta charset="UTF-8">
5     <title>IMBB BSSMS | Dashboard</title>
6     <meta content="width=device-width, initial-
scale=1, maximum-scale=1, user-scalable=
no" name="viewport">
7     <link href="<?php echo base_url("public_html
/vendor/bootstrap/css/bootstrap.css"); ?>"
rel="stylesheet" type="text/css" />
8     <link href="<?php echo base_url("public_html
/vendor/plugins/multiselect/css/multi-
select.css"); ?>" rel="stylesheet" type="
text/css" />
9     <link href="https://maxcdn.bootstrapcdn.com/
font-awesome/4.3.0/css/font-awesome.min.
css" rel="stylesheet" type="text/css" />
10    <link href="https://code.ionicframework.com/
ionicons/2.0.1/css/ionicons.min.css" rel=
"stylesheet" type="text/css" />
11    <link href="<?php echo base_url("public_html
/vendor/plugins/datatables/dataTables.
bootstrap.css"); ?>" rel="stylesheet"
type="text/css" />
12    <link href="<?php echo base_url("public_html
/vendor/adminlte/css/AdminLTE.min.css");
?>" rel="stylesheet" type="text/css" />
13    <link href="<?php echo base_url("public_html
/vendor/plugins/iCheck/square/blue.css");
?>" rel="stylesheet" type="text/css" />
14    <link href="<?php echo base_url("public_html
/vendor/adminlte/css/skins/skin-blue.css"
); ?>" rel="stylesheet" type="text/css"
/>
15    <link href="<?php echo base_url("public.html
/assets/css/system.css"); ?>" rel="
stylesheet" type="text/css" />
16    <!--[if lt IE 9]>
17    <script src="https://oss.maxcdn.com/
html5shiv/3.7.2/html5shiv.min.js"></
script>
18    <script src="https://oss.maxcdn.com/respond
/1.4.2/respond.min.js"></script>
19    </[endif]>
20 </head>
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23 <header class="main-header">
24     <a href="<?=$base_url('dashboard'); ?>" class
="logo">
25     <span class="logo-mini"><b>BSS</b>MS</span
>
26     <span class="logo-lg"><b>IMBB BSSMS</b></
span>
27 </a>
28 <nav class="navbar navbar-static-top" role="
navigation">
29     <a href="#" class="sidebar-toggle" data-
toggle="offcanvas" role="button">
30     <span class="sr-only">Toggle navigation
</span>
31 </a>
32 <div class="navbar-custom-menu">
33     <ul class="nav navbar-nav">
34         <li class="dropdown user user-menu">
35             <a href="#" class="dropdown-toggle"
data-toggle="dropdown">
36                 " class="user-image" alt="User
Image"/>
38 <span class="hidden-xs"><?=$this102
->session->userdata('logged-in')[
firstname']; ?></span> 103
39 </a> 104
40 <ul class="dropdown-menu"> 105
41 <li class="user-header"> 106
42 " class="img-circle" alt="User
Image" /> 109
43 <p>
44 <?= $this->session->userdata(' 110
logged-in')[ 'fullname']; ?>
45 <small style="color:#00c0ef;" 111
><?=( $this->session->userdata('logged-in
')[ 'is_sysadmin'] ? 'System Administrator'
: '' ) ?></small> 112
46 </p> 113
47 </li> 114
48 <li class="user-footer"> 115
49 <div class="pull-right"> 116
50 <a href="<?= base_url(' 117
authenticate/logout');?>" class="btn btn-
default btn-flat">Sign out</a> 118
51 </div> 119
52 </li> 120
53 </ul> 121
54 </li> 122
55 <li>
56 <a href="#" data-toggle="control- 123
sidebar"><i class="fa fa-gears"></i></a> 124
57 </li>
58 </ul>
59 </div>
60 </nav> 125
61 </header> 126
62 <aside class="main-sidebar">
63 <section class="sidebar"> 127
64 <div class="user-panel">
65 <div class="pull-left image"> 128
66 "
class="img-circle" alt="User Image" />
67 </div> 129
68 <div class="pull-left info"> 130
69 <p><?=$this->session->userdata(' 131
logged_in')[ 'fullname']; ?></p>
70 </div> 132
71 </div>
72 <ul class="sidebar-menu">
73 <li class="header"></li>
74 <li class="active"> 133
75 <a href="#"><i class='glyphicon'>134
glyphicon-tasks '></i><span>Projects </
span></a> 135
76 <ul class="treeview-menu"> 136
77 <li><a href="<?= base_url(' 137
projects/create');?>"><i class='glyphicon
glyphicon-chevron-right '></i>New Project</
a></li> 138
78 <li class="active"><a href=" 139
<?= base_url(' projects ');?>"><i class='
glyphicon glyphicon-chevron-right '></i>
Project List </a></li> 140
79 </ul> 141
80 </li> 141
81 <li class="treeview"> 142
82 <a href="#"><i class='glyphicon'>143
glyphicon-tasks '></i><span>Users </
span></a>
83 <ul class="treeview-menu">
84 <li><a href="<?= base_url(' 144
users/create');?>"><i class='glyphicon
glyphicon-chevron-right '></i>New User</a
></li>
85 <li><a href="<?= base_url(' 147
users ');?>"><i class='glyphicon glyphicon'>148
-glyphicon-chevron-right '></i>User List </a></li>
86 </ul> 149
87 </li>
88 </li>
89 <a href="<?= base_url('
systemlogs ');?>"><i class='glyphicon
glyphicon-tasks '></i> <span>Audit Trail </
span></a>
90 </li> 151
91 </ul> 153
92 </section> 154
93 </aside>
94 <div class="content-wrapper"> 155
95 <section class="content-header">
96 <h1>
97 <?php echo $pageTitle; ?> 156
98 <small></small>
99 </h1> 157
100 <ol class="breadcrumb">
101 <li><a href="#"><i class="fa fa-
dashboard"></i> <?php echo $pageTitle;
?></a></li>
<li class="active"><?php echo
$pageHeader; ?></li>
</ol>
</section>
<?php if( isset( $message ) ) : ?>
<div class="col-xs-offset-0 col-xs-12">
<div class="alert alert-<?=( $message[ 'type
'] ) ?> alert-dismissable">
<button type="button" class="close" data-
dismiss="alert" aria-hidden="true"> </
button>
<h4><i class="icon fa fa-<?=( $message[ '
icon ' ] ) ?>"></i> <?php echo $message[ 'text
' ]; ?></h4>
</div>
</div>
<?php endif; ?>
<section class="content">
<div class="row">
<div class="col-md-12">
<div class="box box-primary">
<div class="box-header">
<h3 class="box-title">Project
Information</h3>
</div>
<?php echo form-open(' projects/
update'); ?>
<div class="box-body">
<div class="col-sm-<?=( $this->
session->userdata('logged_in')[ '
is_sysadmin'] != '1' ? '12' : '6' ) ?>
invoice-col">
<div class="form-group">
<label for="projectName">
Project Name</label>
<input type="hidden" name="
projectId" value="<?= $project->id ?>"/>
<input type="text" class="form
-control" id=" projectName" name="
projectName" placeholder="Enter Project
Name" value="<?= $project->name ?>"/>
</div>
<div class="form-group">
<label for="description">
Description</label>
<textarea class="form-control"
id=" description" name="description" rows
="3" placeholder="Enter Description"><?=$
project->description ?></textarea>
</div>
<div class="form-group">
<label for="startDate">Start
Date</label>
<input type="date" class="form
-control" id=" startDate" name="startDate"
value="<?= $project->start_date ?>"/>
</div>
<div class="form-group">
<label for="endDate">End Date
</label>
<input type="date" class="form
-control" id=" endDate" name="endDate"
value="<?= $project->end_date ?>"/>
</div>
<div style="display:<?=( $this->
session->userdata('logged_in')[ '
is_sysadmin'] = '1' ? : 'none' ) ?>"
class="col-sm-6 invoice-col">
<div class="form-group">
<label>Project Head</label>
<select class="form-control"
name=" projectHead">
<option></option>
<?php foreach( $users as $row
):?>
<option <?=(
$projectHeadUserId == $row->id ? '
selected' : '' ) ?> value="<?=$row->id ?>"
><?=$row->firstname?> <?=$row->lastname
?></option>
</select>
</div>
<div class="form-group">
<label>Choose researcher(s) to
REMOVE</label>
<select multiple class="form-
control" name="researchersToRemove[]" id="
researchersToRemove">
<?php foreach( $researchers
as $row):?>
<option value="<?=$row->id
?>"><?=$row->firstname?> <?=$row->
lastname?></option>

```

```

158         <?php endforeach;?>           192         </div>
159     </select >                         193         </form>
160 </div >                                 194         </div>
161     <div class="form-group">            195         </div>
162     <label>Choose researcher (s) to    196         </div>
        ADD</label>                       197     </section>
163     <select multiple class="form-198 </div>
        control" name="researchersToAdd []" id="
        researchersToAdd">              199
164     <?php foreach($users as $row    200 <footer class="main-footer">
        ):?>                               201 <div class="pull-right hidden-xs">
165     <option value="<?=$row->id    202 <strong>Copyright &copy; 2015 <a href="#">
        ?>"><?=$row->firstname?> <?=$row->    203 IMBB</a>.</strong> All rights reserved.
        lastname?></option>              204 </div>
166     <?php endforeach;?>              205                        206                            207 </div>
167 </div >                                 208 </div>
168 </div >                                 209 </div>
169 <div class="box-footer">                210
170 <center >                               211 <script src="<?php echo base_url("public_html/
        <button type="button" class="btn    212 <script src="<?php echo base_url("public_html/
        btn-primary" data-toggle="modal" data-    213 <script src="<?php echo base_url("public_html/
        target="#projectModal">Update</button>    214 <script src="<?php echo base_url("public_html/
        <button type="reset" class="btn    215 <script src="<?php echo base_url("public_html/
        btn-default">Clear</button>            216 <script src="<?php echo base_url("public_html/
174 </center >                               217 <script >
        </div >                           218 $( '#researchersToRemove' ). multiSelect ( );
175 </div >                                 219 $( '#researchersToAdd' ). multiSelect ( );
176 </div >                                 220 </script >
177 </div >                                 221 </script >
178 </div >                                 222
179 <div >                                    223 </body>
180 <div class="modal fade" id="            224 </html>
        projectModal" tabindex="1" role="dialog"
        aria-labelledby="myModalLabel" aria-
        hidden="true">
182     <div class="modal-dialog">          213 <script src="<?php echo base_url("public_html/
183     <div class="modal-content">        214 <script src="<?php echo base_url("public_html/
184     <div class="modal-header">        215 <script src="<?php echo base_url("public_html/
185     <button type="button" class="btn    216 <script src="<?php echo base_url("public_html/
        close" data-dismiss="modal" aria-label="    217 <script >
        Close"><span aria-hidden="true">&times;</    218 $( '#researchersToRemove' ). multiSelect ( );
        span></button>                    219 $( '#researchersToAdd' ). multiSelect ( );
186     <h4 class="modal-title">Are        220 </script >
        you sure you want to update the existing    221 </script >
        project?</h4>                     222
187     </div >                             223 </body>
188     <div class="modal-footer">         224 </html>
189     <button type="submit" class="btn    219 $( '#researchersToRemove' ). multiSelect ( );
        btn btn-primary" id="addProjectSubmit">    220 $( '#researchersToAdd' ). multiSelect ( );
        Update Project                    221 </script >
190     </button >                          222
191     <button type="button" class="btn    223 </body>
        btn btn-default" data-dismiss="modal">    224 </html>
        Close</button >

```

## Listing 29: Projects/index.php

```

1 <!DOCTYPE html>                        19 </head>
2 <html >                                20
3 <head >                                21 <body class="skin-blue sidebar-mini">
4     <meta charset="UTF-8">              22 <div class="wrapper">
5     <title>IMBB BSSMS | Dashboard</title > 23 <header class="main-header">
6     <meta content="width=device-width, initial- 24 <a href="<?= base_url('dashboard');?>" class
        scale=1, maximum-scale=1, user-scalable=    25 = "logo">
        no' name='viewport' >              26 <span class="logo-mini"><b>BSS</b></span>
7     <link href="<?php echo base_url("public_html    27 <span class="logo-lg"><b>IMBB BSSMS</b></
        /vendor/bootstrap/css/bootstrap.css"); ?>    28 </span>
        " rel="stylesheet" type="text/css" />      29 </a>
8     <link href="https://maxcdn.bootstrapcdn.com/    30 <nav class="navbar navbar-static-top" role="
        font-awesome/4.3.0/css/font-awesome.min.    31 navigation">
        css" rel="stylesheet" type="text/css" />    32 <a href="#" class="sidebar-toggle" data-
9     <link href="https://code.ionicframework.com/    33 toggle="offcanvas" role="button">
        icons/2.0.1/css/ionic.min.css" rel="    34 <span class="sr-only">Toggle navigation
        stylesheet" type="text/css" />          35 </span>
10    <link href="<?php echo base_url("public_html    36 </a>
        /vendor/plugins/datatables/dataTables.    37 <div class="navbar-custom-menu">
        bootstrap.css"); ?>" rel="stylesheet"    38 <ul class="nav navbar-nav">
        type="text/css" />                  39 <li class="dropdown user user-menu">
11    <link href="<?php echo base_url("public_html    40 <!-- Menu Toggle Button -->
        /vendor/adminlte/css/AdminLTE.min.css");    41 <a href="#" class="dropdown-toggle"
        ?>" rel="stylesheet" type="text/css" />    42 data-toggle="dropdown">
12    <link href="<?php echo base_url("public_html    43 " rel="stylesheet" type="text/css" />    45 png"); ?>" class="user-image" alt="User
13    <link href="<?php echo base_url("public_html    46 Image"/>
        /vendor/adminlte/css/skins/skin-blue.css"    47 <span class="hidden-xs"><?= $this
        ); ?>" rel="stylesheet" type="text/css"    48 ->session->userdata('logged_in')['
        />                                     49 firstname']; ?></span>
14    <link href="<?php echo base_url("public_html    50 </a>
        /assets/css/system.css"); ?>" rel="    51 <ul class="dropdown-menu">
        stylesheet" type="text/css" />          52 <li class="user-header">
15    <!--[if lt IE 9]>                    53 </    55 png"); ?>" class="img-circle" alt="User
        script >                               56 Image" />
17    <script src="https://oss.maxcdn.com/respond    57 <p>
        /1.4.2/respond.min.js"></script >      58 <?= $this->session->userdata('
18    <![endif]>-->                        59 logged_in')['fullname']; ?>

```

```

45 <small style="color:#00c0ef;"113
><?=( $this->session->userdata('logged_in14
')[ 'is_sysadmin' ] ? 'System Administrator
': '' ) ?></small> 115
46 </p> 116
47 </li> 117
48 <li class="user-footer"> 118
49 <div class="pull-right"> 119
50 <a href="<?=( base_url('
authenticate/logout');?>" class="btn btn-120
default btn-flat">Sign out</a> 121
51 </div> 122
52 </li> 123
53 </ul> 124
54 </li> 125
55 <li> 126
56 <a href="#" data-toggle="control-
sidebar"><i class="fa fa-gears"></i></a>127
57 </li> 128
58 </ul>
59 </div>
60 </nav>
61 </header> 129
62 <aside class="main-sidebar"> 130
63 <section class="sidebar">
64 <div class="user-panel"> 131
65 <div class="pull-left image">
66 " 132
class="img-circle" alt="User Image" /> 133
67 </div> 134
68 <div class="pull-left info"> 135
69 <p><?=( $this->session->userdata('
logged_in')[ 'fullname' ]; ?></p> 136
70 </div> 137
71 </div> 138
72 <ul class="sidebar-menu"> 139
73 <li class="header"></li> 140
74 <li class="active"> 141
75 <a href="#"><i class='glyphicon 143
glyphicon-tasks '></i> <span>Projects </
span></a> 144
76 <ul class="treeview-menu"> 145
77 <li><a href="<?=( base_url('
projects/create');?>"><i class='glyphicon 147
glyphicon-chevron-right '></i>New Project< 148
</a></li> 149
78 <li class="active"><a href=" 150
<?=( base_url(' projects ');?>"><i class=' 151
glyphicon glyphicon-chevron-right '></i> 152
Project List</a></li> 153
79 </ul> 154
80 </li> 155
81 <li class="treeview"> 156
82 <a href="#"><i class=' glyphicon 158
glyphicon-tasks '></i></a> <span>Users </
span></li></a> 159
83 <ul class="treeview-menu"> 160
84 <li><a href="<?=( base_url('
users/create ');?>"><i class=' glyphicon
glyphicon-chevron-right '></i>New User</a 161
></li> 162
85 <li><a href="<?=( base_url('
users ');?>"><i class=' glyphicon glyphicon
-chevron-right '></i>User List</a></li> 163
></ul> 164
86 </li> 165
87 <li> 166
88 <li> 167
89 <a href="<?=( base_url('
systemlogs ');?>"><i class=' glyphicon
glyphicon-tasks '></i> <span>Audit Trail< 168
span></a> 169
90 </li> 170
91 </ul> 171
92 </section> 172
93 </aside> 173
94
95 <div class="content-wrapper"> 174
96 <section class="content-header"> 175
97 <h1> 176
98 <?php echo $pageHeader; ?> 177
99 <small></small> 178
100 </h1> 179
101 <ol class="breadcrumb"> 180
102 <li><a href="#"><i class="fa fa-
dashboard"></i> <?php echo $pageTitle; 181
?></a></li> 182
103 <li class="active"><?php echo
$pageHeader; ?></li> 183
104 </ol> 184
105 </section> 185
106 <section class="content"> 186
107 <div class="row"> 187
108 <div class="col-xs-12"> 188
109 <div class="box"> 189
110 <div class="box-header">
111 <h3 class="box-title">Projects </h3> 189
112 > </div><!-- /.box-header --> 190

```

```

        btn-primary" id="submit">Assign Users</div>
button>
191 <button type="button" class="btn btn-
      btn-default" data-dismiss="modal">Close
</button>
192 </div>
193 </form>
194 </div>
195 </div>
196 </div>
197
198 </section>
199 </div>
200
201 <footer class="main-footer">
202 <div class="pull-right hidden-xs">
203 <strong>Copyright &copy; 2015 <a href="#">
      IMBB</a></strong> All rights reserved.
204 </div>
205 " width="35px"
      ></img>
206 " width="35
      px"></img>
207 " width="35
      px"></img>
208 </footer>
209
        <script src="<?php echo base_url("public_html/
      vendor/plugins/jquery/jquery-2.1.4.min.js
      "); ?>"></script>
213 <script src="<?php echo base_url("public_html/
      vendor/bootstrap/js/bootstrap.min.js");
      ?>" type="text/javascript"></script>
214 <script src="<?php echo base_url("public_html/
      vendor/adminlte/js/app.min.js"); ?>" type
      ="text/javascript"></script>
215 <script src="<?php echo base_url("public_html/
      vendor/plugins/datatables/jquery.
      dataTables.min.js"); ?>" type="text/
      javascript"></script>
216 <script src="<?php echo base_url("public_html/
      vendor/plugins/datatables/dataTables.
      bootstrap.min.js"); ?>" type="text/
      javascript"></script>
217 <script type="text/javascript">
      $(function () {
218     $('#example1').DataTable({
219       "columnDefs": [
220         { "orderable": false, "targets": 0 }
221       ]
222     });
223 </script>
224 </body>
225 </html>

```

### Listing 30: Reports/export.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <title>Print Invoice</title>
5 <link href="<?php echo base_url("
      public_html/vendor/bootstrap/css/
      bootstrap.css"); ?>" rel="stylesheet"
      type="text/css" />
6 <link href="<?php echo base_url("
      public_html/vendor/plugins/datatables/
     /dataTables.bootstrap.css"); ?>" rel="
      stylesheet" type="text/css" />
7 <style>
8     body{
9         margin: 20px;
10    }
11    #header {
12        line-height: 5px;
13        text-align: center;
14    }
15    #title {
16        text-align: center;
17        font-size: 24px;
18    }
19    .class
20    #wrapper
21    {
22        width:180mm;
23        margin:0 15mm;
24    }
25 </style>
26 </head>
27 <body>
28 <div class="wrapper">
29 <div id="header">
30 <p>National Institute of Health</p>
31 <p>Institute of Molecular Biology and
      Biotechnology</p>
32 </div>
33 <hr />
34 <br />
35 <div id="title">
36 <h4><?=$this->session->userdata('
      logged_in')[ 'projectName'];?> Specimen
      Samples Report</h4>
37 </div>
38 <br />
39 <div class="row">
40 <div class="col-xs-12">
41 <div class="box">
42 <div class="box-header">
43 <h5 class="box-title">Number of
      Specimen Samples per Type</h5>
44 </div><!-- /.box-header -->
45 <div class="box-body">
46 <table id="report1" class="table
      table-bordered table-hover">
47 <thead>
48 <tr>
49 <th>Specimen Type</th>
50 <th>Number of Specimen Samples
51 </th>
52 </tr>
53 </thead>
54 <tbody>
55 <?php foreach($types as $row)
56 <tr>
57 <td><?=$row->name?></td>
58 <td><?=$counts[$row->id
59 -1]?></td>
60 </tr>
61 <?php endforeach;?>
62 </tbody>
63 </table>
64 </div>
65 </div>
66 </div>
67 </div>
68 </div>
69 </div>
70 </div>
71 </div>
72 </body>
73 </html>

```

### Listing 31: Reports/index.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content="width=device-width, initial-
      scale=1, maximum-scale=1, user-scalable=
      no" name="viewport">
7 <link href="<?php echo base_url("public_html/
      vendor/bootstrap/css/bootstrap.css"); ?>"
      rel="stylesheet" type="text/css" />
8 <link href="https://maxcdn.bootstrapcdn.com/
      font-awesome/4.3.0/css/font-awesome.min.
      css" rel="stylesheet" type="text/css" />
9 <link href="https://code.ionicframework.com/16
      icons/2.0.1/css/ionic.min.css" rel="
      stylesheet" type="text/css" />
10 <link href="<?php echo base_url("public_html/
      vendor/plugins/datatables/dataTables.
      bootstrap.css"); ?>" rel="stylesheet"
      type="text/css" />
11 <link href="<?php echo base_url("public_html/
      vendor/adminlte/css/AdminLTE.min.css");
      ?>" rel="stylesheet" type="text/css" />
12 <link href="<?php echo base_url("public_html/
      vendor/plugins/iCheck/square/blue.css");
      ?>" rel="stylesheet" type="text/css" />
13 <link href="<?php echo base_url("public_html/
      vendor/adminlte/css/skins/skin-blue.css"
      ); ?>" rel="stylesheet" type="text/css"
      />
14 <link href="<?php echo base_url("public.html/
      assets/css/system.css"); ?>" rel="
      stylesheet" type="text/css" />
15 <!--[if lt IE 9]>
16 <script src="https://oss.maxcdn.com/
      html5shiv/3.7.2/html5shiv.min.js"></
      script>
17 <script src="https://oss.maxcdn.com/respond

```

```

    /1.4.2/respond.min.js"></script>
18 <![endif]-->
19 </head>
20
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23 <header class="main-header">
24 <a href="<?= base_url('dashboard');?>" class
    ="logo">
25 <span class="logo-mini"><b>BSS</b></span>
26 <span class="logo-lg"><b>IMBB BSSMS</b></span>
27 </a>
28 <nav class="navbar navbar-static-top" role="
    navigation">
29 <a href="#" class="sidebar-toggle" data-
    toggle="offcanvas" role="button">
30 <span class="sr-only">Toggle navigation
    </span>
31 </a>
32 <div class="navbar-custom-menu">
33 <ul class="nav navbar-nav">
34 <li class="dropdown user user-menu">
35 <a href="#" class="dropdown-toggle"
    data-toggle="dropdown">
36 " class="user-image" alt="User
    Image"/>
37 <span class="hidden-xs"><?= $this
    ->session->userdata('logged_in')[
    'firstname']; ?></span>
38 </a>
39 <ul class="dropdown-menu">
40 <li class="user-header">
41 " class="img-circle" alt="User
    Image" />
42 <p>
43 <?= $this->session->userdata('
    logged_in')[ 'fullname']; ?>
44 <small style="color:#00c0ef;"
    ><?= $this->session->userdata('logged_in'
    )['usertype']; ?></small>
45 </p>
46 </li>
47 <li class="user-footer">
48 <div class="pull-left">
49 <a href="<?= base_url('
    dashboard');?>" class="btn btn-default
    btn-flat">Dashboard</a>
50 </div>
51 <div class="pull-right">
52 <a href="<?= base_url('
    authenticate/logout');?>" class="btn btn-
    default btn-flat">Sign out</a>
53 </div>
54 </li>
55 </ul>
56 </li>
57 <li>
58 <a href="#" data-toggle="control-
    sidebar"><i class="fa fa-gears"></i></a>
59 </li>
60 </ul>
61 </div>
62 </nav>
63 </header>
64 <aside class="main-sidebar">
65 <section class="sidebar">
66 <div class="user-panel">
67 <div class="pull-left image">
68 "
    class="img-circle" alt="User Image" />
69 </div>
70 <div class="pull-left info">
71 <p><?= $this->session->userdata('
    logged_in')[ 'fullname']; ?></p>
72 <span class="glyphicon glyphicon-user">
    </span><span style="margin-left:5%;
    color:#00c0ef;"><?= $this->session->
    userdata('logged_in')[ 'usertype']; ?></
    span>
73 </div>
74 </div>
75 <ul class="sidebar-menu">
76 <li class="header"><?= $this->session
    ->userdata('logged_in')[ 'projectName'];
    ?></li>
77 <li>
78 <a href="#"><i class='glyphicon
    glyphicon-tasks'></i> <span>Project</span
    > <i class="fa fa-angle-left pull-right"
    ></i></a>
79 <ul class="treeview-menu">
80 <li><a href="<?= base_url('
    singleproject/index');?>"><i class='
    glyphicon glyphicon-chevron-right'></i>
    About</a></li>
    <li style="display:<?=( $this->
    session->userdata('logged_in')[
    'usertypeId'] = 1 ? 'none' : '' )?>"><a
    href="<?= base_url('singleproject/edit' )
    ;?>"><i class='glyphicon glyphicon-
    chevron-right'></i>Update</a></li>
    </ul>
    </li>
    <li>
    <a href="#"><i class='glyphicon
    glyphicon-tasks'></i> <span>Specimen</
    span> <i class="fa fa-angle-left pull-
    right"></i></a>
    <ul class="treeview-menu">
    <li style="display:<?=( $this->
    session->userdata('logged_in')[
    'usertypeId'] = 1 ? 'none' : '' )?>"><a
    href="<?= base_url('specimen/create' );?>"
    ><i class='glyphicon glyphicon-chevron-
    right'></i>New Sample</a></li>
    <li><a href="<?= base_url('
    specimen/index');?>"><i class='glyphicon
    glyphicon glyphicon-chevron-right'></i>Sample List
    </a></li>
    </ul>
    </li>
    <li>
    <a href="#"><i class='glyphicon
    glyphicon-tasks'></i> <span>Access</span>
    <i class="fa fa-angle-left pull-right"
    ></i></a>
    <ul class="treeview-menu">
    <li><a href="<?= base_url('
    specimen/access' );?>"><i class='glyphicon
    glyphicon glyphicon-chevron-right'></i>Sample
    Access</a></li>
    <li style="display:<?=( $this->
    session->userdata('logged_in')[
    'usertypeId'] = 1 ? 'none' : '' )?>"><a
    href="<?= base_url('specimen/logs' );?>"><
    i class='glyphicon glyphicon-chevron-
    right'></i>Sample Access Logs</a></li>
    </ul>
    </li>
    <li class="active">
    <a href="<?= base_url('reports' );?>"
    ><i class='glyphicon glyphicon-tasks'></i>
    <span>Reports</span></a>
    </li>
    </ul>
    </section>
    </aside>
    <div class="content-wrapper">
    <section class="content-header">
    <h1>
    <?php echo $pageHeader; ?>
    <small></small>
    </h1>
    <ol class="breadcrumb">
    <li><a href="#"><?php echo $pageTitle;
    ?></a></li>
    <li><a href="<?= base_url('reports/pdf' )
    ;?>" class="btn btn-default">Export to
    PDF</a></li>
    </ol>
    </section>
    <?php if( isset( $message ) ) : ?>
    <div class="col-xs-offset-0 col-xs-12">
    <div class="alert alert-success alert-
    dismissable">
    <button type="button" class="close" data-
    dismiss="alert" aria-hidden="true"> </
    button>
    <h4><i class="icon fa fa-check"></i> <?php
    echo $message; ?></h4>
    </div>
    </div>
    <?php endif; ?>
    <section class="content">
    <div class="row">
    <div class="col-xs-12">
    <div class="box">
    <div class="box-header">
    <h5 class="box-title">Number of
    Specimen Samples per Type</h5>
    <div class="box-body">
    <table id="example1" class="table
    table-bordered table-hover">
    <thead>
    <tr>
    <th>Specimen Type</th>
    <th>Number of Specimen Samples
  
```

```

139     </th>
140     </tr>
141     </thead>
142     <tbody>
143     <?php foreach($types as $row)
144     <tr>
145     <td><?=$row->name?></td>
146     <td><?=$counts[$row->id
147     -1]?></td>
148     </tr>
149     <?php endforeach?>
150     </tbody>
151     </table>
152     </div>
153     </div>
154 </section>
155 </div>
156 </div>
157 <footer class="main-footer">
158 <div class="pull-right hidden-xs">
159 <strong>Copyright &copy; 2015 <a href="#">
160 IMBB</a>.</strong> All rights reserved.
161 </div>
162 " width="35px"></img>
164 </div>
165 </div>
166 </div>
167 <script src="<?php echo base_url("public_html/
168 vendor/plugins/jquery/jquery-2.1.4.min.js
169 "); ?>"></script>
170 <script src="<?php echo base_url("public_html/
171 vendor/bootstrap/js/bootstrap.min.js");
172 ?>" type="text/javascript"></script>
173 <script src="<?php echo base_url("public_html/
174 vendor/adminlte/js/app.min.js"); ?>" type
175 ="text/javascript"></script>
176 <script src="<?php echo base_url("public_html/
177 vendor/plugins/datatables/jquery.
178 dataTables.min.js"); ?>" type="text/
179 javascript"></script>
180 <script src="<?php echo base_url("public_html/
181 vendor/plugins/datatables/dataTables.
182 bootstrap.min.js"); ?>" type="text/
183 javascript"></script>
184 </script>
185 </body>
186 </html>

```

### Listing 32: SingleProject/edit.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content="width=device-width, initial-
7 scale=1, maximum-scale=1, user-scalable=
8 no" name="viewport">
9 <link href="<?php echo base_url("public_html
10 /vendor/bootstrap/css/bootstrap.css"); ?>"
11 rel="stylesheet" type="text/css" />
12 <link href="https://maxcdn.bootstrapcdn.com/
13 font-awesome/4.3.0/css/font-awesome.min.
14 css" rel="stylesheet" type="text/css" />
15 <link href="https://code.ionicframework.com/
16 ionic/2.0.1/css/ionic.min.css" rel="
17 stylesheet" type="text/css" />
18 <link href="<?php echo base_url("public_html
19 /vendor/adminlte/css/AdminLTE.min.css");
20 ?>" rel="stylesheet" type="text/css" />
21 <link href="<?php echo base_url("public_html
22 /vendor/plugins/iCheck/square/blue.css");
23 ?>" rel="stylesheet" type="text/css" />
24 <link href="<?php echo base_url("public_html
25 /vendor/adminlte/css/skins/skin-blue.css"
26 ); ?>" rel="stylesheet" type="text/css"
27 />
28 <link href="<?php echo base_url("public_html
29 /assets/css/system.css"); ?>" rel="
30 stylesheet" type="text/css" />
31 <!--[if lt IE 9]>
32 <script src="https://oss.maxcdn.com/
33 html5shiv/3.7.2/html5shiv.min.js"></
34 script>
35 <script src="https://oss.maxcdn.com/respond
36 /1.4.2/respond.min.js"></script>
37 </if-->
38 </head>
39 <body class="skin-blue sidebar-mini">
40 <div class="wrapper">
41 <header class="main-header">
42 <a href="<?=$base_url('dashboard'); ?>" class="
43 =logo">
44 <span class="logo-mini"><b>BSS</b></span>
45 <span class="logo-lg"><b>IMBB BSSMS</b></
46 span>
47 </a>
48 <nav class="navbar navbar-static-top" role="
49 navigation">
50 <a href="#" class="sidebar-toggle" data-
51 toggle="offcanvas" role="button">
52 <span class="sr-only">Toggle navigation
53 </span>
54 </a>
55 <div class="navbar-custom-menu">
56 <ul class="nav navbar-nav">
57 <li class="dropdown user user-menu">
58 <a href="#" class="dropdown-toggle"
59 data-toggle="dropdown">
60 "
62 class="img-circle" alt="User Image" />
63 <ul class="dropdown-menu">
64 <li class="user-header">
65 <span class="hidden-xs"><?=$this
66 ->session->userdata('logged_in')[
67 'firstname']; ?></span>
68 <ul class="dropdown-menu">
69 <li class="user-header">
70 " class="img-circle" alt="User
73 Image" />
74 <p>
75 <?=$this->session->userdata('
76 logged_in')['fullname']; ?>
77 <small style="color:#00c0ef;">
78 <?=$this->session->userdata('logged_in'
79 )['usertype']; ?></small>
80 </p>
81 <li class="user-footer">
82 <div class="pull-left">
83 <a href="<?=$base_url('
84 dashboard'); ?>" class="btn btn-default
85 btn-flat">Dashboard</a>
86 </div>
87 <div class="pull-right">
88 <a href="<?=$base_url('
89 authenticate/logout'); ?>" class="btn btn-
90 default btn-flat">Sign out</a>
91 </div>
92 </li>
93 </ul>
94 </div>
95 </nav>
96 </header>
97 <aside class="main-sidebar">
98 <section class="sidebar">
99 <div class="user-panel">
100 <div class="pull-left image">
101 "
103 class="img-circle" alt="User Image" />
104 </div>
105 <div class="pull-left info">
106 <p><?=$this->session->userdata('
107 logged_in')['fullname']; ?></p>
108 <span class="glyphicon glyphicon-user"
109 ></span><span style="margin-left:5%;
110 color:#00c0ef;"><?=$this->session->
111 userdata('logged_in')['usertype']; ?></
112 span>
113 </div>
114 </div>
115 <ul class="sidebar-menu">
116 <li class="header"><?=$this->session

```



```

->userdata('logged_in')['projectName']; 130
?></li> 131
77 <li class="active"> 132
78 <a href="#"><i class='glyphicon
glyphicon-tasks'></i> <span>Project</span>
><i class="fa fa-angle-left pull-right" 134
></i></a>
79 <ul class="treeview-menu"> 135
80 <li><a href="<?= base_url('
singleproject/index');?>"><i class='
glyphicon glyphicon-chevron-right'></i> 137
About</a></li> 138
81 <li class="active" style="display
:<?=( $this->session->userdata('logged_in
')['usertypeId'] == 1 ? 'none' : '' )?>"><
a href="<?= base_url('singleproject/edit
');?>"><i class='glyphicon glyphicon-
chevron-right'></i>Update</a></li> 140
82 </ul> 141
83 </li> 142
84 <li> 143
85 <a href="#"><i class='glyphicon
glyphicon-tasks'></i> <span>Specimen</
span> <i class="fa fa-angle-left pull-
right"></i></a> 143
86 <ul class="treeview-menu"> 144
87 <li style="display:<?=( $this->
session->userdata('logged_in')['
usertypeId'] == 1 ? 'none' : '' )?>"><a
href="<?= base_url('specimen/create');?>"
><i class='glyphicon glyphicon-chevron-
right'></i>New Sample</a></li> 147
88 <li><a href="<?= base_url('
specimen/index');?>"><i class='glyphicon
glyphicon-chevron-right'></i>Sample List 150
</a></li>
89 </ul> 151
90 </li> 152
91 <li> 153
92 <a href="#"><i class='glyphicon
glyphicon-tasks'></i> <span>Access</span>
<i class="fa fa-angle-left pull-right" 154
></i></a> 155
93 <ul class="treeview-menu"> 156
94 <li><a href="<?= base_url('
specimen/access');?>"><i class='glyphicon
glyphicon-chevron-right'></i>Sample
Access</a></li> 158
95 <li style="display:<?=( $this->
session->userdata('logged_in')['
usertypeId'] == 1 ? 'none' : '' )?>"><a
href="<?= base_url('specimen/logs');?>"
><i class='glyphicon glyphicon-chevron-
right'></i>Sample Access Logs</a></li> 163
96 </ul> 164
97 </li> 165
98 <li style="display:<?=( $this->session
->userdata('logged_in')['usertypeId'] ==
1 ? 'none' : '' )?>">
99 <a href="<?= base_url('reports');?>"
><i class='glyphicon glyphicon-tasks'></i>
<span>Reports</span></a> 166
100 </li> 167
101 </ul> 169
102 </section>
103 </aside>
104
105 <div class="content-wrapper"> 170
106 <section class="content-header">
107 <h1> 171
108 <?php echo $pageHeader; ?> 172
109 <small></small> 173
110 </h1>
111 <ol class="breadcrumb">
112 <li><a href="#"><i class="fa fa-
dashboard"></i> <?php echo $pageTitle;
?></a></li> 174
113 <li class="active"><?php echo
$pageHeader; ?></li> 175
114 </ol> 176
115 </section> 177
116
117 <?php if( isset( $message ) ) : ?> 180
118 <div class="col-xs-offset-0 col-xs-12"> 181
119 <div class="alert alert-danger alert-
dismissable"> 182
120 <button type="button" class="close" data-
dismiss="alert" aria-hidden="true"> </
button> 183
121 <h4><i class="icon fa fa-ban"></i> <?php
echo $message; ?></h4> 184
122 </div> 185
123 </div> 186
124 <?php endif; ?> 187
125
126 <!-- Main content --> 188
127 <section class="content">
128 <div class="row"> 189
129 <div class="col-md-12">
<div class="box box-primary">
<div class="box-header">
<h3 class="box-title">Project
Information</h3>
</div><!-- /.box-header -->
<?php echo form_open('singleproject/
update'); ?>
<div class="box-body">
<div class="col-sm-12 invoice-col">
<div class="form-group">
<label for="projectName">
Project Name</label>
<input type="text" class="form-
-control" id="projectName" name="
projectName" placeholder="Enter Project
Name" value="<?= $project->name ?>"/>
</div>
<div class="form-group">
<label for="description">
Description</label>
<textarea class="form-control"
id="description" name="description" rows
="3" placeholder="Enter Description"><?=
$project->description ?></textarea>
</div>
<div class="form-group">
<label for="startDate">Start
Date</label>
<input type="date" class="form-
-control" id="startDate" name="startDate"
value="<?= $project->start_date ?>"/>
</div>
<div class="form-group">
<label for="endDate">End Date
</label>
<input type="date" class="form-
-control" id="endDate" name="endDate"
value="<?= $project->end_date ?>">
</div>
</div>
</div>
<div class="box-footer">
<center>
<button type="button" class="btn
btn-primary" data-toggle="modal" data-
target="#projectModal">Update</button>
<button type="reset" class="btn
btn-default">Clear</button>
</center>
</div>
</div>
<div class="modal fade" id="
projectModal" tabindex="-1" role="dialog"
aria-labelledby="myModalLabel" aria-
hidden="true">
<div class="modal-dialog">
<div class="modal-content">
<div class="modal-header">
<button type="button" class="
close" data-dismiss="modal" aria-label="
Close"><span aria-hidden="true">&times;</
span></button>
<h4 class="modal-title">Are
you sure you want to update the existing
project?</h4>
</div>
<div class="modal-footer">
<button type="submit" class="
btn btn-primary" id="addProjectSubmit">
Update Project
</button>
<button type="button" class="
btn btn-default" data-dismiss="modal">
Close</button>
</div>
</div>
</form>
</div>
</div>
</div>
</section>
</div>
<div class="main-footer">
<div class="pull-right hidden-xs">
<strong>Copyright &copy; 2015 <a href="#">
IMBB</a>.</strong> All rights reserved.
</div>
" width="35px"
>></img>
" width="35
px"></img>
" width="35

```

```

px"></img>
191 </footer>
192 </div>
193
194 <script src="<?php echo base_url("public_html/
vendor/plugins/jQuery/jQuery-2.1.4.min.js"); ?>"></script>
195 <script src="<?php echo base_url("public_html/
vendor/bootstrap/js/bootstrap.min.js"); ?>" type="text/
javascript"></script>
196 <script src="<?php echo base_url("public_html/
vendor/adminlte/js/app.min.js"); ?>" type="text/
javascript"></script>
197 <script src="<?php echo base_url("public_html/
vendor/plugins/datatables/jquery.
dataTables.min.js"); ?>" type="text/
javascript"></script>
198 <script src="<?php echo base_url("public_html/
vendor/plugins/datatables/dataTables.
bootstrap.min.js"); ?>" type="text/
javascript"></script>
199
200 </body>
201 </html>

```

### Listing 33: SingleProject/index.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content="width=device-width, initial-
scale=1, maximum-scale=1, user-scalable=
no" name="viewport">
7 <link href="<?php echo base_url("public_html/
vendor/bootstrap/css/bootstrap.css"); ?>"
rel="stylesheet" type="text/css" />
8 <link href="https://maxcdn.bootstrapcdn.com/
font-awesome/4.3.0/css/font-awesome.min.
css" rel="stylesheet" type="text/css" />
9 <link href="https://code.ionicframework.com/
ionicons/2.0.1/css/ionicons.min.css" rel="
stylesheet" type="text/css" />
10 <link href="<?php echo base_url("public_html
/vendor/plugins/datatables/dataTables.
bootstrap.css"); ?>" rel="stylesheet"
type="text/css" />
11 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/AdminLTE.min.css");
?>" rel="stylesheet" type="text/css" />
12 <link href="<?php echo base_url("public_html
/vendor/plugins/iCheck/square/blue.css");
?>" rel="stylesheet" type="text/css" />
13 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/skins/skin-blue.css"
); ?>" rel="stylesheet" type="text/css"
/ >
14 <link href="<?php echo base_url("public_html
/assets/css/system.css"); ?>" rel="
stylesheet" type="text/css" />
15 <!--[if lt IE 9]>
16 <script src="https://oss.maxcdn.com/
html5shiv/3.7.2/html5shiv.min.js"></
script>
17 <script src="https://oss.maxcdn.com/respond
/1.4.2/respond.min.js"></script>
18 <![endif]-->
19 </head>
20
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23 <header class="main-header">
24 <a href="<?= base_url('dashboard'); ?>" class="
logo">
25 <span class="logo-mini"><b>BSS</b></span>
26 <span class="logo-lg"><b>IMBB BSSMS</b></
span>
27 </a>
28 <nav class="navbar navbar-static-top" role="
navigation">
29 <a href="#" class="sidebar-toggle" data-
toggle="offcanvas" role="button">
30 <span class="sr-only">Toggle navigation
31 </a>
32 <div class="navbar-custom-menu">
33 <ul class="nav navbar-nav">
34 <li class="dropdown user user-menu">
35 <a href="#" class="dropdown-toggle"
data-toggle="dropdown">
36 " class="user-image" alt="User
Image" />
37 <span class="hidden-xs"><?= $this
->session->userdata('logged_in')[
firstname']; ?></span>
38 </a>
39 <ul class="dropdown-menu">
40 <li class="user-header">
41 " class="img-circle" alt="User
Image" />
42 <p>
43 <?= $this->session->userdata(
logged_in')[ 'fullname']; ?>
44 <small style="color:#00c0ef;"
><?= $this->session->userdata('logged_in',
) [' usertype ']; ?></small>
</li>
<li class="user-footer">
<div class="pull-left">
<a href="<?= base_url('
dashboard'); ?>" class="btn btn-default
btn-flat">Dashboard</a>
</div>
<div class="pull-right">
<a href="<?= base_url('
authenticate/logout'); ?>" class="btn btn-
default btn-flat">Sign out</a>
</div>
</li>
</ul>
</li>
<li>
<a href="#" data-toggle="control-
sidebar"><i class="fa fa-gears"></i></a>
</li>
</ul>
</div>
</nav>
</header>
<aside class="main-sidebar">
<section class="sidebar">
<div class="user-panel">
<div class="pull-left image">
"
class="img-circle" alt="User Image" />
</div>
<div class="pull-left info">
<p><?= $this->session->userdata('
logged_in')[ 'fullname']; ?></p>
<span class="glyphicon glyphicon-user">
</span><span style="margin-left:5%;
color:#00c0ef;"><?= $this->session->
userdata('logged_in')[ 'usertype']; ?></
span>
</div>
</div>
<ul class="sidebar-menu">
<li class="header"><?= $this->session
->userdata('logged_in')[ 'projectName'];
?></li>
<li class="active">
<a href="#"><i class='glyphicon
glyphicon-tasks'></i> <span>Project</span>
<i class="fa fa-angle-left pull-right">
</i></a>
<ul class="treeview-menu">
<li class="active"><a href="<?=
base_url('singleproject/index'); ?>"><i
class='glyphicon glyphicon-chevron-right'
></i>About</a></li>
<li style="display:<?=( $this->
session->userdata('logged_in')[ '
usertypeId'] = 1 ? 'none' : '' ); ?>"><a
href="<?= base_url('singleproject/edit'
); ?>"><i class='glyphicon glyphicon-
chevron-right' ></i>Update</a></li>
</ul>
</li>
<li>
<a href="#"><i class='glyphicon
glyphicon-tasks'></i> <span>Specimen</
span> <i class="fa fa-angle-left pull-
right"></i></a>
<ul class="treeview-menu">
<li style="display:<?=( $this->
session->userdata('logged_in')[ '
usertypeId'] = 1 ? 'none' : '' ); ?>"><a
href="<?= base_url('specimen/create'); ?>"
><i class='glyphicon glyphicon-chevron-
right' ></i>New Sample</a></li>
<li><a href="<?= base_url('
specimen/index'); ?>"><i class='glyphicon
glyphicon-chevron-right' ></i>Sample List
</a></li>
</ul>
</li>
</ul>
</div>
</div>
<a href="#"><i class='glyphicon

```

```

glyphicon-tasks '></i> <span>Access</span></li>
93 </li></ul>
94 <ul class="treeview-menu">
specimen/access');?><i class='glyphicon'
glyphicon-chevron-right '></i>Sample
Access</a></li>
95 <li style="display:<?=( $this->
session->userdata('logged_in')[
usertypeId ] == 1 ? 'none' : '' )?><a
href="<?= base_url('specimen/logs');?>"<
i class='glyphicon glyphicon-chevron-
right '></i>Sample Access Logs</a></li>
96 </li>
97 </ul>
98 <li style="display:<?=( $this->session
->userdata('logged_in')[ 'usertypeId ' ] ==
1 ? 'none' : '' )?>">
99 <a href="<?= base_url('reports');?>">
><i class='glyphicon glyphicon-tasks '></i>
> <span>Reports</span></a>
100 </li>
101 </ul>
102 </section>
103 </aside>
104 <div class="content-wrapper">
105 <section class="content-header">
106 <h1>
107 <?php echo $pageHeader; ?>
108 <small></small>
109 </h1>
110 <ol class="breadcrumb">
111 <li><a href="#"><i class="fa fa-
dashboard"></i> <?php echo $pageTitle;
?></a></li>
112 <li class="active"><?php echo
$pageHeader; ?></li>
113 </ol>
114 </section>
115
116 <?php if ( isset( $message ) ) : ?>
117 <div class="col-xs-offset-0 col-xs-12">
118 <div class="alert alert-success alert-
dismissable">
119 <button type="button" class="close" data-
dismiss="alert" aria-hidden="true"> </
button>
120 <h4><i class="icon fa fa-check"></i> <?php
echo $message; ?></h4>
121 </div>
122 </div>
123 <?php endif; ?>
124
125 <section class="content">
126 <div class="row">
127 <div class="col-xs-12">
128 <div class="box">
129 <div class="box-header">
130 <h3 class="box-title">Project
Information</h3>
131 </div>
132 <div class="box-body">
133 <table id="example1" class="table
table-bordered table-hover">
134 <thead>
135 <tr>
136 <th>Name</th>
137 <th>Description</th>
138 <th>Start Date</th>
139 <th>End Date</th>
140 </tr>
141 </thead>
142 <tbody>
143 <tr>
144 <td><?=$project->name?></td>
145 <td><?=$project->
description?></td>
146 <td><?=$project->start_date
?></td>
147 <td><?=$project->end_date
?></td>
148 </tr>

```

### Listing 34: Specimen/access.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content="width=device-width, initial-
scale=1, maximum-scale=1, user-scalable=
no" name="viewport">
7 <link href="<?php echo base_url("public_html
/vendor/bootstrap/css/bootstrap.css"); ?>"
rel="stylesheet" type="text/css" />
8 <link href="https://maxcdn.bootstrapcdn.com/
font-awesome/4.3.0/css/font-awesome.min.
css" rel="stylesheet" type="text/css" />
9 <link href="https://code.ionicframework.com/
ionicons/2.0.1/css/ionicons.min.css" rel="
stylesheet" type="text/css" />
10 <link href="<?php echo base_url("public_html
/vendor/plugins/datatables/dataTables.bootstrap.
css"); ?>" rel="stylesheet"
type="text/css" />
<link href="<?php echo base_url("public_html
/vendor/adminlte/css/AdminLTE.min.css");
?>" rel="stylesheet" type="text/css" />
<link href="<?php echo base_url("public_html
/vendor/plugins/iCheck/square/blue.css");
?>" rel="stylesheet" type="text/css" />

```

```

13 <link href="<?php echo base_url("public_html74
    /vendor/adminlte/css/skins/skin-blue.css" 75
    ); ?>" rel="stylesheet" type="text/css" 76
    />
14 <link href="<?php echo base_url("public_html
    /assets/css/system.css"); ?>" rel=" 77
    stylesheet" type="text/css" /> 78
15 <!--[if lt IE 9]>
16 <script src="https://oss.maxcdn.com/
    html5shiv/3.7.2/html5shiv.min.js"></
    script> 79
17 <script src="https://oss.maxcdn.com/respond
    /1.4.2/respond.min.js"></script> 80
18 <![endif]-->
19 </head> 81
20
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23 <header class="main-header">
24 <a href="<?= base_url('dashboard'); ?>" class
    ="logo">
25 <span class="logo-mini"><b>BSS</b></span> 82
    > 83
26 <span class="logo-lg"><b>IMBB BSSMS</b></span> 84
    </a>
27 <nav class="navbar navbar-static-top" role="
    navigation">
28 <a href="#" class="sidebar-toggle" data-
    toggle="offcanvas" role="button"> 86
    <span class="sr-only">Toggle navigation 87
    </span>
29 </a>
30 <div class="navbar-custom-menu">
31 <ul class="nav navbar-nav">
32 <li class="dropdown user user-menu"> 88
33 <a href="#" class="dropdown-toggle"
    data-toggle="dropdown">
34 " class="user-image" alt="User 90
    Image" /> 91
35 <span class="hidden-xs"><?= $this
    ->session->userdata('logged.in')[ 92
    'firstname']; ?></span>
36 </a>
37 <ul class="dropdown-menu">
38 <li class="user-header"> 93
39 " class="img-circle" alt="User 95
    Image" />
40 <p>
41 <?= $this->session->userdata('
    logged.in')[ 'fullname']; ?>
42 <small style="color:#00c0ef;"
    ><?= $this->session->userdata('logged.in'
    )['usertype']; ?></small> 96
43 </p> 97
44 </li> 98
45 <li class="user-footer">
46 <div class="pull-left">
47 <a href="<?= base_url('
    dashboard'); ?>" class="btn btn-default 99
    btn-flat">Dashboard</a>
48 </div> 100
49 <div class="pull-right">
50 <a href="<?= base_url('
    authenticate/logout'); ?>" class="btn 101
    btn-flat">Sign out</a> 102
51 </div> 103
52 </li> 104
53 </ul> 105
54 </div> 106
55 </div> 107
56 <div class="main-sidebar">
57 <section class="sidebar">
58 <div class="user-panel">
59 <div class="pull-left image">
60 " 117
    class="img-circle" alt="User Image" /> 118
61 </div>
62 <div class="pull-left info">
63 <p><?= $this->session->userdata('
    logged.in')[ 'fullname']; ?></p>
64 <span class="glyphicon glyphicon-user"> 119
    ></span><span style="margin-left:5%;
    color:#00c0ef;"><?= $this->session->
    userdata('logged.in')[ 'usertype']; ?></ 120
    span> 121
65 </div> 122
66 </div> 123
67 </div> 124
68 </div> 125

```

```

126 <?php endif; ?>
127 <section class="content">
128
129 <div class="row">
130 <div class="col-md-12">
131 <div class="box box-primary">
132 <div class="box-header">
133 <h3 class="box-title"></h3>
134 </div><!-- /.box-header -->
135 <?php echo form_open('specimen/
logAccess'); ?>
136 <div class="box-body">
137 <div class="col-sm-4 invoice-col">
138 <div class="form-group">
139 <label for="amount">Amount<i
class="glyphicon glyphicon-asterisk"
style="color:red"></i></label>(in
microliters/milligrams)
140 <input type="number" class="
form-control" id="amount" name="amount"
required="required" min="1" max="1000">
141 </div>
142 </div>
143 <div class="col-sm-4 invoice-col">
144 <div class="form-group">
145 <label>Test<i class="glyphicon
glyphicon-asterisk" style="color:red"></i>
146 <select class="form-control"
name="test" required="required">
147 <option></option>
148 <?php foreach($tests as $row
):?>
149 <option value="<?=$row->id
?>"><?=$row->name?></option>
150 <?php endforeach;?>
151 </select>
152 </div>
153 </div>
154 <div class="col-sm-4 invoice-col">
155 <div class="form-group">
156 <label for="barcode">Sample
Barcode<i class="glyphicon glyphicon-
asterisk" style="color:red"></i></label>
157 <input type="text" class="form
-control" id="barcode" name="barcode"
placeholder="Scan/Enter Barcode" required="
required">
158 </div>
159 </div>
160 <center>
161 <button type="button" class="btn
btn-primary" data-dismiss="modal" data-
target="#sampleModal" id="access">Submit
162 </button>
<button type="reset" class="btn
btn-default">Clear</button>
163 </center>
164 </div>
165 </div>
166 </div>
167
168 <div class="modal fade" id="sampleModal"
tabindex="-1" role="dialog" aria-
labelledby="myModalLabel" aria-hidden="
true">
169 <div class="modal-dialog">
170 <div class="modal-content">
171 <div class="modal-header">
172 <button type="button" class="close
" data-dismiss="modal" aria-label="Close">
<span aria-hidden="true">&times;</span>
</button>
173 <h4 class="modal-title">Are you
sure you want to access the sample?</h4>
174 </div>
175 <div class="modal-footer">
176 <button type="submit" class="btn
btn-primary" id="addProjectSubmit">Submit
</button>
<button type="button" class="btn
btn-default" data-dismiss="modal">Close</
button>
</div>
</form>
</div>
</div>
</div>
</section>
</div>
<footer class="main-footer">
<div class="pull-right hidden-xs">
<strong>Copyright &copy; 2015 <a href="#">
IMBB</a>.</strong> All rights reserved.
</div>
" width="35px"
"></img>
" width="35
px"></img>
" width="35
px"></img>
</footer>
</div>
<script src="<?php echo base_url("public_html/
vendor/plugins/jquery/jquery-2.1.4.min.js
"); ?>"></script>
<script src="<?php echo base_url("public_html/
vendor/bootstrap/js/bootstrap.min.js");
?>" type="text/javascript"></script>
<script src="<?php echo base_url("public_html/
vendor/adminlte/js/app.min.js"); ?>" type
="text/javascript"></script>
<script src="<?php echo base_url("public_html/
vendor/plugins/datatables/jquery.
dataTables.min.js"); ?>" type="text/
javascript"></script>
<script src="<?php echo base_url("public_html/
vendor/plugins/datatables/dataTables.
bootstrap.min.js"); ?>" type="text/
javascript"></script>
<script>
document.querySelector("#amount").
addEventListener("keypress", function (
evt) {
if (evt.which < 48 || evt.which > 57)
{
evt.preventDefault();
}
});
</script>
</body>
</html>

```

### Listing 35: Specimen/create.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content="width=device-width, initial-
scale=1, maximum-scale=1, user-scalable=
no" name="viewport">
7 <link href="<?php echo base_url("public_html
/vendor/bootstrap/css/bootstrap.css"); ?>"
rel="stylesheet" type="text/css" />
8 <link href="https://maxcdn.bootstrapcdn.com/18
font-awesome/4.3.0/css/font-awesome.min.
css" rel="stylesheet" type="text/css" />
9 <link href="https://code.ionicframework.com/21
ionicons/2.0.1/css/ionicons.min.css" rel="22
stylesheet" type="text/css" />
10 <link href="<?php echo base_url("public_html
/vendor/plugins/datatables/dataTables.
bootstrap.css"); ?>" rel="stylesheet"
25 type="text/css" />
11 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/AdminLTE.min.css");
?>" rel="stylesheet" type="text/css" />
12 <link href="<?php echo base_url("public_html
/vendor/plugins/iCheck/square/blue.css");
?>" rel="stylesheet" type="text/css" />
13 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/skins/skin-blue.css"
); ?>" rel="stylesheet" type="text/css"
/>
14 <link href="<?php echo base_url("public_html
/assets/css/system.css"); ?>" rel="
stylesheet" type="text/css" />
<!--[if lt IE 9]>
<script src="https://oss.maxcdn.com/
html5shiv/3.7.2/html5shiv.min.js"></
script>
<script src="https://oss.maxcdn.com/respond
/1.4.2/respond.min.js"></script>
</[endif]>
</head>
<body class="skin-blue sidebar-mini">
<div class="wrapper">
<header class="main-header">
<a href="<?=$base_url('dashboard'); ?>" class
="logo">
<span class="logo-mini"><b>BSS</b></span>
<span class="logo-lg"><b>IMBB BSSMS</b></span>
</a>
<nav class="navbar navbar-static-top" role="
navigation">

```

```

29 <a href="#" class="sidebar-toggle" data- 86
toggle="offcanvas" role="button"> 87
30 <span class="sr-only">Toggle navigation
</span>
31 </a>
32 <div class="navbar-custom-menu">
33 <ul class="nav navbar-nav">
34 <li class="dropdown user user-menu"> 88
35 <a href="#" class="dropdown-toggle"
data-toggle="dropdown">
36 " class="user-image" alt="User 90
Image"/> 91
37 <span class="hidden-xs"><?= $this 92
->session->userdata('logged_in')[
'firstname']; ?></span>
38 </a>
39 <ul class="dropdown-menu"> 93
40 <li class="user-header"> 94
41 " class="img-circle" alt="User
Image" /> 95
42 <p>
43 <?= $this->session->userdata('
logged_in')[ 'fullname']; ?>
44 <small style="color:#00c0ef;"
><?= $this->session->userdata('logged_in'
)[ 'usertype']; ?></small> 96
45 </p> 97
46 </li> 98
47 <li class="user-footer">
48 <div class="pull-left">
49 <a href="<?= base_url('
dashboard '); ?>" class="btn btn-default
btn-flat">Dashboard</a> 99
50 </div> 100
51 <div class="pull-right"> 101
52 <a href="<?= base_url('
authenticate/logout '); ?>" class="btn btn- 102
default btn-flat">Sign out</a> 103
53 </div> 104
54 </li> 105
55 </ul> 106
56 </li> 107
57 <li> 108
58 <a href="#" data-toggle="control- 109
sidebar"><i class="fa fa-gears"></i></a> 110
59 </li> 111
60 </ul>
61 </div> 112
62 </nav>
63 </header> 113
64 <aside class="main-sidebar"> 114
65 <section class="sidebar"> 115
66 <div class="user-panel"> 116
67 <div class="pull-left image"> 117
68 "
class="img-circle" alt="User Image" /> 119
69 </div>
70 <div class="pull-left info">
71 <p><?= $this->session->userdata('
logged_in')[ 'fullname']; ?></p> 120
72 <span class="glyphicon glyphicon-user"
></span><span style="margin-left:5%;
color:#00c0ef;"><?= $this->session->
userdata('logged_in')[ 'usertype']; ?></
span> 121
73 </div> 122
74 </div> 123
75 <ul class="sidebar-menu"> 124
76 <li class="header"><?= $this->session 125
->userdata('logged_in')[ 'projectName']; 126
?></li> 127
77 <li> 128
78 <a href="#"><i class='glyphicon 129
glyphicon-tasks'></i><span>Project</span
> <i class="fa fa-angle-left pull-right" 130
></i></a> 131
79 <ul class="treeview-menu"> 132
80 <li><a href="<?= base_url('
singleproject/index '); ?>"><i class='
glyphicon glyphicon-chevron-right'></i> 133
About</a></li> 134
81 <li style="display:<?=( $this-> 135
session->userdata('logged_in')[
'usertypeId'] == 1 ? 'none' : '' ) ?>"><a 136
href="<?= base_url('singleproject/edit ') 137
; ?>"><i class='glyphicon glyphicon- 138
chevron-right'></i>Update</a></li> 139
82 </ul> 140
83 </li> 141
84 <li class="active"> 142
85 <a href="#"><i class='glyphicon 143
glyphicon-tasks'></i><span>Specimen</
span> <i class="fa fa-angle-left pull- 144
right"></i></a> 145
<ul class="treeview-menu">
<li class="active" style="display:
:<?=( $this->session->userdata('logged_in
')[ 'usertypeId'] == 1 ? 'none' : '' ) ?>">
<a href="<?= base_url('specimen/create ')
; ?>"><i class='glyphicon glyphicon-
chevron-right'></i>New Sample</a></li>
<li><a href="<?= base_url('
specimen/index '); ?>"><i class='glyphicon
glyphicon-chevron-right'></i>Sample List
</a></li>
</ul>
</li>
<li>
<a href="#"><i class='glyphicon
glyphicon-tasks'></i><span>Access</span>
<i class="fa fa-angle-left pull-right"
></i></a>
<ul class="treeview-menu">
<li><a href="<?= base_url('
specimen/access '); ?>"><i class='glyphicon
glyphicon-chevron-right'></i>Sample
Access</a></li>
<li style="display:<?=( $this->
session->userdata('logged_in')[
'usertypeId'] == 1 ? 'none' : '' ) ?>">
<a href="<?= base_url('specimen/logs '); ?>">
<i class='glyphicon glyphicon-chevron-
right'></i>Sample Access Logs</a></li>
</ul>
</li>
<li style="display:<?=( $this->session
->userdata('logged_in')[ 'usertypeId'] ==
1 ? 'none' : '' ) ?>">
<a href="<?= base_url('reports '); ?>"
><i class='glyphicon glyphicon-tasks'></i>
<span>Reports</span></a>
</ul>
</li>
</ul>
</aside>
<div class="content-wrapper">
<section class="content-header">
<h1>
<?php echo $pageHeader; ?>
<small></small>
</h1>
<ol class="breadcrumb">
<li><a href="#"><i class="fa fa-
dashboard"></i><span><?php echo $pageTitle;
?></a></li>
<li class="active"><?php echo
$pageHeader; ?></li>
</ol>
</section>
<?php if( isset( $message ) ) : ?>
<div class="col-xs-offset-0 col-xs-12">
<div class="alert alert- <?=( $message[ 'type
'] ) ?> alert-dismissable">
<button type="button" class="close" data-
dismiss="alert" aria-hidden="true"> </
button>
<h4><i class="icon fa fa- <?=( $message[ '
icon ' ] ) ?>"></i><span><?php echo $message[ 'text
']; ?></h4>
</div>
</div>
<?php endif; ?>
<section class="content">
<div class="row">
<div class="col-md-4">
<div class="box box-primary">
<div class="box-header">
<h3 class="box-title">Specimen
Sample Information</h3>
</div>
<?php echo form-open('specimen/
insert '); ?>
<div class="box-body">
<div class="form-group">
<label>Project: </label><?=
$this->session->userdata('logged_in')[
'projectName']; ?>
</div>
<div class="form-group">
<label>Other Projects</label>
<select multiple class="form-
control" name="projectNames[]">
<?php foreach( $projects as
$row): ?>
<option value="<?= $row->id ?>"
><?= $row->name ?></option>
<?php endforeach; ?>
</select>
<p class="help-block">For shared
specimen sample.</p>
</div>
</div>
<div class="form-group">

```

```

146         <label for="barcode">Barcode<i 212
class="glyphicon glyphicon-asterisk" 213
style="color:red"></i></label> 214
147         <input type="text" class="form-
control" id="barcode" name="barcode" 215
placeholder="Barcode" required="required"
>
148         <p class="help-block">You may 216
scan or enter barcode here.</p> 217
149         </div> 218
150         <div class="form-group"> 219
151         <label>Specimen Type<i class="
glyphicon glyphicon-asterisk" style=" 220
color:red"></i></label> 221
152         <select class="form-control"
name="type" required="required"> 222
153         <option></option> 223
154         <?php foreach($specimenTypes 225
as $row):?> 226
155         <option value="<?=$row->id?" 227
><?=$row->name?></option> 228
156         <?php endforeach;?> 229
157         </select>
158         </div> 230
159         <div class="form-group"> 231
160         <label for="collectionDate"> 232
Collection Date</label>
161         <input type="date" class="form-233
control" id="collectionDate" name="
collectionDate"> 234
162         </div> 235
163         <div class="form-group"> 236
164         <label for="origVolume">Volume<i 237
class="glyphicon glyphicon-asterisk" 238
style="color:red"></i></label> 239
165         <input type="number" class="form-240
-control" id="originalVolume" name="
originalVolume" min="0" max="1000" 241
required="required"> 242
166         <p class="help-block">(in 243
microliters or milligrams)</p> 244
167         </div> 245
168         </div> 246
169         </div> 247
170         </div> 248
171         </div> 249
172         </div> 250
173         <div class="col-md-4"> 251
174         <div class="box box-warning"> 252
175         <div class="box-header"> 253
176         <h3 class="box-title">Source 254
Information</h3> 255
177         </div>
178         <div class="box-body"> 256
179         <div class="form-group">
180         <label>
181         <input type="checkbox"
name="masked" id="masked" /> 257
182         Masked 258
183         </label>
184         </div> 259
185         <div class="form-group"> 260
186         <label>First Name</label>
187         <input type="text" class="261
form-control" id="fName" name="fName"
placeholder="Enter First Name"/> 262
188         </div>
189         <div class="form-group"> 263
190         <label>Last Name</label>
191         <input type="text" class="264
form-control" id="lName" name="lName"
placeholder="Enter Last Name"/> 265
192         </div> 266
193         <div class="form-group"> 267
194         <label>Sex</label> 268
195         <div class="radio" name=" 269
sourceSex">
196         <label>
197         <input type="radio" 271
id="femaleRadio" name="sex" value="female
"/> 272
198         Female 273
199         </label> 274
200         </div> 275
201         <div class="radio">
202         <label>
203         <input type="radio"
id="maleRadio" name="sex" value="male"/> 276
204         Male 277
205         </label> 278
206         </div> 279
207         </div>
208         <div class="form-group">
209         <label>Date of Birth</
label> 280
210         <input type="date" class="
form-control" name="birthdate" id="
birthdate"/> 281
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```

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282         <div class="modal-footer"> 307 <script src="<?php echo base_url("public_html/
283         <button type="submit" class="btn
        btn-primary" id="addSampleSubmit">Submit
        </button>
284         <button type="button" class="btn 308 <script>
        btn-default" data-dismiss="modal">Close 309
        </button> 310
285         </div> 311
286         </form> 312
287         </div> 313
288         </div> 314
289         </div> 315
290 316
291 </section> 317
292 </div> 318
293 <footer class="main-footer"> 319
294 <div class="pull-right hidden-xs"> 320
295 <strong>Copyright &copy; 2015 <a href="#"> 321
        IMBB</a></strong> All rights reserved. 322
296 </div> 323
297 " width="35px"> 325
        ></img> 326
298 " width="35 328
        px"></img> 329
299 " width="35 331
        px"></img> 332
300 </footer> 333
301 </div> 334
302 335
303 <script src="<?php echo base_url("public_html/336
        vendor/plugins/jquery/jquery-2.1.4.min.js337
        "); ?>"></script> 338
304 <script src="<?php echo base_url("public_html/339
        vendor/bootstrap/js/bootstrap.min.js"); 340
        ?>" type="text/javascript"></script> 341
305 <script src="<?php echo base_url("public_html/342
        vendor/adminlte/js/app.min.js"); ?>" typ343
        e="text/javascript"></script> 344
306 <script src="<?php echo base_url("public_html/345
        vendor/plugins/datatables/jquery. 346
        dataTables.min.js"); ?>" type="text/ 347
        javascript"></script> 348

```

### Listing 36: Specimen/edit.php

```

1 <!DOCTYPE html> 27
2 <html> 28
3 <head> 29
4 <meta charset="UTF-8"> 30
5 <title>IMBB BSSMS | Dashboard</title> 31
6 <meta content="width=device-width, initial- 32
        scale=1, maximum-scale=1, user-scalable= 33
        no" name="viewport"> 34
7 <link href="<?php echo base_url("public_html/ 35
        /vendor/bootstrap/css/bootstrap.css"); ?> 36
        " rel="stylesheet" type="text/css" /> 37
8 <link href="https://maxcdn.bootstrapcdn.com/ 38
        font-awesome/4.3.0/css/font-awesome.min. 39
        css" rel="stylesheet" type="text/css" /> 40
9 <link href="https://code.ionicframework.com/ 41
        icons/2.0.1/css/ionicons.min.css" rel= 42
        "stylesheet" type="text/css" /> 43
10 <link href="<?php echo base_url("public_html 44
        /vendor/plugins/datatables/dataTables. 45
        bootstrap.css"); ?>" rel="stylesheet" 46
        type="text/css" /> 47
11 <link href="<?php echo base_url("public_html 48
        /vendor/adminlte/css/AdminLTE.min.css"); 49
        ?>" rel="stylesheet" type="text/css" /> 50
12 <link href="<?php echo base_url("public_html 51
        /vendor/plugins/iCheck/square/blue.css"); 52
        ?>" rel="stylesheet" type="text/css" /> 53
13 <link href="<?php echo base_url("public_html 54
        /vendor/adminlte/css/skins/skin-blue.css" 55
        ); ?>" rel="stylesheet" type="text/css" 56
        /> 57
14 <link href="<?php echo base_url("public_html 58
        /assets/css/system.css"); ?>" rel=" 59
        stylesheet" type="text/css" /> 60
15 <!--[if lt IE 9]> 61
16 <script src="https://oss.maxcdn.com/ 62
        html5shiv/3.7.2/html5shiv.min.js"></ 63
        script> 64
17 <script src="https://oss.maxcdn.com/respond 65
        /1.4.2/respond.min.js"></script> 66
18 <![endif]--> 67
19 </head> 68
20 69
21 <body class="skin-blue sidebar-mini"> 70
22 <div class="wrapper"> 71
23 <header class="main-header"> 72
24 <a href="<?php echo base_url('dashboard'); ?>" class= 73
        ="logo"> 74
25 <span class="logo-mini"><b>BSS</b></span> 75
        <span class="logo-lg"><b>IMBB BSSMS</b></span> 76
26 </div> 77

```



```

        sidebar"><i class="fa fa-gears"></i></a>111
59     </li>112
60     </ul>
61 </div>
62 </nav>113
63 </header>
64 <aside class="main-sidebar">114
65 <section class="sidebar">115
66 <div class="user-panel">116
67 <div class="pull-left image">117
68 
69 </div>120
70 <div class="pull-left info">
71 <p><?= $this->session->userdata('121
    logged_in')[ 'fullname' ]; ?></p>
72 <span class="glyphicon glyphicon-user">122
    ></span><span style="margin-left:5%;>123
    color:#00c0ef;"><?= $this->session->124
    userdata('logged_in')[ 'usertype' ]; ?></125
    span>
73 </div>126
74 </div>127
75 <ul class="sidebar-menu">
76 <li class="header"><?= $this->session128
    ->userdata('logged_in')[ 'projectName' ];>129
    ?></li>130
77 <li>
78 <a href="#"><i class='glyphicon 131
    glyphicon-tasks '></i> <span>Project</span>
    > <i class="fa fa-angle-left pull-right">132
    ></i></a>133
79 <ul class="treeview-menu">134
80 <li><a href="<?= base_url('135
    singleproject/index ');?>"><i class='
    glyphicon glyphicon-chevron-right '></i>136
    About</a></li>137
81 <li style="display:<?=( $this->138
    session->userdata('logged_in')[ '
    usertypeId ' ] == 1 ? 'none' : '' )?>"><a139
    href="<?= base_url('singleproject/edit ')
    ;?>"><i class="glyphicon glyphicon-140
    chevron-right '></i>Update</a></li>
82 </ul>141
83 </li>
84 <li class="active">142
85 <a href="#"><i class="glyphicon 143
    glyphicon-tasks '></i> <span>Specimen</
    span> <i class="fa fa-angle-left pull-144
    right"></i></a>145
86 <ul class="treeview-menu">147
87 <li style="display:<?=( $this->148
    session->userdata('logged_in')[ '
    usertypeId ' ] == 1 ? 'none' : '' )?>"><a149
    href="<?= base_url('specimen/create ');?>"
    ><i class="glyphicon glyphicon-chevron-149
    right '></i>New Sample</a></li>150
88 <li class="active"><a href="<?=151
    base_url('specimen/index ');?>"><i class=152
    glyphicon glyphicon-chevron-right '></i>
    Sample List</a></li>153
89 </ul>
90 </li>
91 <li>
92 <a href="#"><i class='glyphicon 154
    glyphicon-tasks '></i> <span>Access</span>
    <i class="fa fa-angle-left pull-right">
    ></i></a>
93 <ul class="treeview-menu">155
94 <li><a href="<?= base_url('156
    specimen/access ');?>"><i class="glyphicon
    glyphicon-chevron-right '></i>Sample
    Access</a></li>
95 <li style="display:<?=( $this->157
    session->userdata('logged_in')[ '
    usertypeId ' ] == 1 ? 'none' : '' )?>"><a158
    href="<?= base_url('specimen/logs ');?>">
    <i class="glyphicon glyphicon-chevron-157
    right '></i>Sample Access Logs</a></li>
96 </ul>158
97 </li>
98 <li style="display:<?=( $this->session159
    ->userdata('logged_in')[ 'usertypeId ' ] ==
    1 ? 'none' : '' )?>">
99 <a href="<?= base_url('reports ');?>"
    ><i class="glyphicon glyphicon-tasks '></i>161
    > <span>Reports</span></a>
100 </li>
101 </ul>
102 </section>162
103 </aside>
104
105 <div class="content-wrapper">163
106 <section class="content-header">164
107 <h1>165
108 <?php echo $pageHeader; ?>166
109 <small></small>167
110 </h1>
<ol class="breadcrumb">
<li><a href="#"><i class="fa fa-
dashboard"></i> <?php echo $pageTitle;
?></a></li>
<li class="active"><?php echo
$pageHeader; ?></li>
</ol>
</section>
<?php if( isset( $message ) ) : ?>
<div class="col-xs-offset-0 col-xs-12">
<div class="alert alert-success alert-
dismissable">
<button type="button" class="close" data-
dismiss="alert" aria-hidden="true"> </
button>
<h4><i class="icon fa fa-check"></i> <?php
echo $message; ?></h4>
</div>
</div>
<?php endif; ?>
<?php echo form_open('specimen/update/'.
$part.'/' . $sampleId);?>
<section class="content">
<div class="row">
<div class="col-xs-12">
<div class="box">
<div class="box-header with-
border">
<h3 class="box-title">
Biospecimen Sample Information</h3>
</div>
<div class="box-body">
<table id="example1" class="
table table-bordered">
<thead>
<tr>
<th>Project</th>
<th>Sample Barcode</th>
<th>Collection Date</
th>
<th>Original Volume</
th>
<th>Current Volume</th>
<th>Specimen Type</th>
</tr>
</thead>
<tbody>
<tr>
<?php if (
$sharedProjects != null ):?>
<td><?php foreach(
$sharedProjects as $row):?> <?= $row->
pname?> <br/> <?php endforeach;?></td>
<?php else: ?>
<td></td>
<?php endif;?>
<?php if($part == 1) :
<td><input type="text"
class="form-control" id="barcode" name="
barcode" placeholder="Barcode" value="<?=
$sampleInfo->barcode?>"></td>
<td><input type="date"
class="form-control" id="collectionDate"
name="collectionDate" value="<?=
$sampleInfo->collection_date?>"></td>
<td><input type="
number" class="form-control" id="
originalVolume" name="originalVolume" min
="0" value="<?= $sampleInfo->
original_volume?>"></td>
<td><input type="
number" class="form-control" id="
currentVolume" name="currentVolume" min="
0" value="<?= $sampleInfo->current_volume
?>"></td>
<td>
<select class="
form-control" name="specimentype">
<option></option>
<?php foreach(
$specimenTypes as $row):?>
<option value="
<?= $row->id?>" <?= ($sampleInfo->name ==
$row->name ? 'selected' : '' )?> <?= $row
->name?></option>
<?php endforeach
;?>
</td>
</tr>
</tbody>
</table>
<?php else : ?>
<td><?= $sampleInfo->
barcode?></td>
<td><?= $sampleInfo->
collection_date?></td>

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168         <td><?=$sampleInfo-> 232         <?php endif;?>
original_volume?></td> 233         </tr>
169         <td><?=$sampleInfo-> 234         <?php endforeach;?>
current_volume?></td> 235         </tbody>
170         <td><?=$sampleInfo-> 236         </table>
sname ?></td> 237         </div>
171         <?php endif;?> 238         <?php if($part == 2) : ?>
172         </tr> 239         <div class="box-footer">
173         </tbody> 240         <div class="pull-right
174         </table> 241         hidden-xs">
175         </div> 242         <button type="button"
176         <?php if($part == 1) : ?> 243         class="btn btn-primary" data-toggle="
177         <div class="box-footer"> 244         modal" data-target="#updateModal">Update
178         <div class="pull-right 245         </button>
hidden-xs"> 246         </div>
179         <button type="button" 247         <div>
class="btn btn-primary" data-toggle=" 248         <?php endif;?>
modal" data-target="#updateModal">Update 249         </div>
</button> 250         </div>
180         </div> 251         </div>
181         <div> 252         <div class="row">
182         <?php endif;?> 253         <div class="col-xs-12">
183         </div> 254         <div class="box">
184         </div> 255         <div class="box-header with-
185         </div> 256         border">
186         257         <h3 class="box-title">Test
187         <div class="row"> 258         Information </h3>
188         <div class="col-xs-12"> 259         </div>
189         <div class="box"> 260         <div class="box-body">
190         <div class="box-header with- 261         <table class="table table-
border"> 262         bordered">
191         <h3 class="box-title">Source 263         <thead>
Information </h3> 264         <tr>
192         </div><!-- /.box-header --> 265         <th>Test</th>
193         <div class="box-body"> 266         <th>Amount</th>
194         <table class="table table- 267         <th>Result</th>
bordered"> 268         <th>Notes</th>
195         <thead> 269         </tr>
196         <tr> 270         </thead>
197         <th>First Name</th> 271         <tbody>
198         <th>Last Name</th> 272         <tr>
199         <th>Sex</th> 273         <td><?=$row->name?></
200         <th>Date of Birth</th> 274         td>
201         <th>Hospital Name</th> 275         <td><?=$row->amount
202         </tr> 276         ?></td>
203         </thead> 277         <td><?=$row->amount
204         <tbody> 278         :?>
205         <?php foreach( $sourceInfo 279         <td>
as $row):?> 280         <td>
206         <tr> 281         <td>
207         <?php if($part == 2) : 282         <input type="text"
?> 283         class="form-control" name="firstname"
208         <td><input type="text" 284         value="<?=$row->firstname?>"/></td>
class="form-control" name="firstname" 285         <td><input type="text"
209         <td><input type="text" 286         class="form-control" name="lastname"
class="form-control" name="lastname" 287         value="<?=$row->lastname?>"/></td>
210         <td> 288         <div class="radio
211         <div class="radio 289         name="sourceSex">
212         <label> 290         <input type="
213         <input type=" 291         radio" id="femaleRadio" name="sex" value="
"female" <?=( $row->sex == 'female' ? ' 292         checked' : '' )?>/>
checked' : '' )?>/> 293         Female
214         Female 294         </label>
215         </label> 295         </div>
216         </div> 296         <div class="radio
217         <div class="radio 297         name="sourceSex">
218         <label> 298         <input type="
219         <input type=" 299         radio" id="maleRadio" name="sex" value="
male" <?=( $row->sex == 'male' ? ' 300         checked' : '' )?>/>
checked' : '' )?>/> 301         Male
220         Male 302         </label>
221         </label> 303         </div>
222         </div> 304         </td>
223         </td> 305         <td><input type="date"
224         <td><input type="date" 306         class="form-control" name="birthdate" id="
birthdate" value="<?=$row->birthdate?> 307         /></td>
class="form-control" name="birthdate" id=" 308         = "birthdate" value="<?=$row->birthdate?>
/></td> 309         <td><input type="text"
225         <td><input type="text" 310         class="form-control" name="hospitalName" id="
hospitalName" value="<?=$row-> 311         hospital_name?>"/></td>
class="form-control" name="hospitalName" 312         id="hospitalName" value="<?=$row->
hospital_name?>"/></td> 313         <?php else : ?>
226         <?php else : ?> 314         <td><?=$row->firstnam
?></td> 315         <td><?=$row->lastname
?></td> 316         <td><?=$row->sex?></td>
?></td> 317         <td><?=$row->birthdate
?></td> 318         <td><?=$row->
hospital_name?></td>
229         <td><?=$row->sex?></td> 319         <td><?=$row->
hospital_name?></td>
230         <td><?=$row->birthdate 320         </td>
?></td> 321         <td><?=$row->
hospital_name?></td>
231         <td><?=$row-> 300         </div>
hospital_name?></td> 301         </div>

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302             <?php endif;?> 358             </td>
303         </div> 359             <td>
304     </div> 360             <select class="form-
305 </div> control" name="column">
306             <option></option> 361
307     <div class="row"> 362             <option <?=( $row
308     <div class="col-xs-12"> ->column == '1' ? 'selected' : '' )?>>1</
309     <div class="box"> option>
310     <div class="box-header with- 363             <option <?=( $row
border"> ->column == '2' ? 'selected' : '' )?>>2</
311     <h3 class="box-title"> option>
312     Location Information </h3> 364             <option <?=( $row
313     </div> ->column == '3' ? 'selected' : '' )?>>3</
314     <div class="box-body"> option>
bordered"> <table class="table table- 365             <option <?=( $row
315     <thead> ->column == '4' ? 'selected' : '' )?>>4</
316     <tr> 366             <option <?=( $row
317     <th>Freezer </th> ->column == '5' ? 'selected' : '' )?>>5</
318     <th>Shelf </th> option>
319     <th>Rack </th> 367             <option <?=( $row
320     <th>Rack Level </th> ->column == '6' ? 'selected' : '' )?>>6</
321     <th>Box </th> option>
322     <th>Row </th> 368             <option <?=( $row
323     <th>Column </th> ->column == '7' ? 'selected' : '' )?>>7</
324     </tr> option>
325     </thead> 369             <option <?=( $row
326     <tbody> ->column == '8' ? 'selected' : '' )?>>8</
327     <?php foreach( option>
328     $locationInfo as $row):?> 370             <option <?=( $row
329     <tr style="display: <?=( ->column == '9' ? 'selected' : '' )?>>9</
$this->session->userdata('logged_in')[ ' 371 option>
usertype' ] != 'Project Head' ? : 'none' 372             </select>
?>>"> <td><?=$row->fname?></td> 373             </tr>
330     <td><?=$row->snumber 374             <?php endforeach;?>
?></td> <td><?=$row->snumber 375             </tbody>
331     <td><?=$row->rnumber 376             </table>
?></td> <td><?=$row->rnumber 377             </div>
332     <td><?=$row->lnumber 378             <?php if($part == 4) : ?>
?></td> <td><?=$row->lnumber 379             <div class="box-footer">
333     <td><?=$row->bnumber 380             <div class="pull-right
?></td> hidden-xs">
334     <td><?=$row->row?></td> <button type="button"
335     <td><?=$row->column 381             class="btn btn-primary" data-toggle="
?></td> </div> modal" data-target="#updateModal">Update
336     </tr> 382             </button>
337     <?php endforeach;?> 383             </div>
338     <?php foreach( 384             <?php endif;?>
339     $locationInfo as $row):?> 385             </div>
340     <tr style="display: <?=( 386             </div>
$this->session->userdata('logged_in')[ 387             </div>
usertype' ] == 'Project Head' ? : 'none' 388             <div class="modal fade" id="updateModal"
?>>"> <td><?=$row->fname?></td> 389             tabindex="-1" role="dialog" aria-
341     <td><?=$row->snumber 390             labelledby="myModalLabel" aria-hidden="
?></td> <td><?=$row->snumber 391             true">
342     <td><?=$row->rnumber 392             <div class="modal-dialog">
?></td> <td><?=$row->rnumber 393             <div class="modal-content">
343     <td><?=$row->lnumber 394             <div class="modal-header">
?></td> <td><input type="text" 395             <button type="button" class="close"
class="form-control" name="boxNumber" 396             data-dismiss="modal" aria-label="Close"><
value="<?=$row->bnumber?>" /></td> <td> 397             span aria-hidden="true">&times;</span></
345     <td> 398             button>
346     <select class="form- 399             <h4 class="modal-title">Are you sure
control" name="row"> 400             you want to update specimen sample
401             <option></option> 401             information?</h4>
402             <option <?=( $row 402             </div>
->row == 'A' ? 'selected' : '' )?>>A</ 403             <div class="modal-footer">
403             <option <?=( $row 404             <button type="submit" class="btn btn
->row == 'B' ? 'selected' : '' )?>>B</ 405             -primary">Update</button>
404             <option <?=( $row 406             <button type="button" class="btn btn
->row == 'C' ? 'selected' : '' )?>>C</ 407             -default" data-dismiss="modal">Cancel</
405             <option <?=( $row 408             button>
->row == 'D' ? 'selected' : '' )?>>D</ 409             </div>
406             <option <?=( $row 410             </form>
->row == 'E' ? 'selected' : '' )?>>E</ 411             </div>
407             <option <?=( $row 412             </div>
->row == 'F' ? 'selected' : '' )?>>F</ 413             </section>
408             <option <?=( $row 414             <div class="main-footer">
->row == 'G' ? 'selected' : '' )?>>G</ 415             <div class="pull-right hidden-xs">
409             <option <?=( $row 416             <strong>Copyright &copy; 2015 <a href="#">
->row == 'H' ? 'selected' : '' )?>>H</ 417             IMBB</a>.</strong> All rights reserved.
410             <option <?=( $row 418             </div>
->row == 'I' ? 'selected' : '' )?>>I</ 419             " width="35px"
->row == 'I' ? 'selected' : '' )?>>I</ 421             ></img>
412             <option <?=( $row 421             row == 'I' ? 'selected' : '' )?>>I</ 422             vendor/img/UPM.Logo.png"); ?>" width="35
413             <option <?=( $row 423             px"></img>
->row == 'I' ? 'selected' : '' )?>>I</ 424             " width="35
->row == 'I' ? 'selected' : '' )?>>I</ 426             px"></img>
415             </select> 427             </footer>
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991             </div>
992             </div>
993             </div>
994             </div>
995             </div>
996             </div>
997             </div>
998             </div>
999             </div>
1000            </div>

```

```

416
417 <script src="<?php echo base_url("public_html/
vendor/plugins/jquery/jquery-2.1.4.min.js
"); ?>"></script>
418 <script src="<?php echo base_url("public_html/
vendor/bootstrap/js/bootstrap.min.js");
?>" type="text/javascript"></script>
419 <script src="<?php echo base_url("public_html/
vendor/adminlte/js/app.min.js"); ?>" type
="text/javascript"></script>
420 <script src="<?php echo base_url("public_html/
vendor/plugins/datatables/jquery.
dataTables.min.js"); ?>" type="text/
javascript"></script>
421 <script src="<?php echo base_url("public_html/
vendor/plugins/datatables/dataTables.
bootstrap.min.js"); ?>" type="text/
javascript"></script>
422 </body>
423 </html>

```

### Listing 37: Specimen/index.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content="width=device-width, initial-
scale=1, maximum-scale=1, user-scalable=
no" name="viewport">
7 <link href="<?php echo base_url("public_html
/vendor/bootstrap/css/bootstrap.css"); ?>
" rel="stylesheet" type="text/css" />
8 <link href="https://maxcdn.bootstrapcdn.com/
font-awesome/4.3.0/css/font-awesome.min.
css" rel="stylesheet" type="text/css" />
9 <link href="https://code.ionicframework.com/
ionicons/2.0.1/css/ionicons.min.css" rel=
"stylesheet" type="text/css" />
10 <link href="<?php echo base_url("public_html
/vendor/plugins/datatables/dataTables.
bootstrap.css"); ?>" rel="stylesheet"
type="text/css" />
11 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/AdminLTE.min.css");
?>" rel="stylesheet" type="text/css" />
12 <link href="<?php echo base_url("public_html
/vendor/plugins/iCheck/square/blue.css");
?>" rel="stylesheet" type="text/css" />
13 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/skins/skin-blue.css"
); ?>" rel="stylesheet" type="text/css"
/ >
14 <link href="<?php echo base_url("public_html
/assets/css/system.css"); ?>" rel="
stylesheet" type="text/css" />
15 <!--[if lt IE 9]>
16 <script src="https://oss.maxcdn.com/
html5shiv/3.7.2/html5shiv.min.js"></
script>
17 <script src="https://oss.maxcdn.com/respond
/1.4.2/respond.min.js"></script>
18 <![endif]-->
19 </head>
20
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23 <header class="main-header">
24 <a href="<?php echo base_url('dashboard');
?>" class
="logo">
25 <span class="logo-mini"><b>BSS</b></span>
26 <span class="logo-lg"><b>IMBB BSSMS</b></
span>
27 </a>
28 <nav class="navbar navbar-static-top" role="
navigation">
29 <a href="#" class="sidebar-toggle" data-
toggle="offcanvas" role="button">
30 <span class="sr-only">Toggle navigation
</span>
31 </a>
32 <div class="navbar-custom-menu">
33 <ul class="nav navbar-nav">
34 <li class="dropdown user user-menu">
35 <a href="#" class="dropdown-toggle"
data-toggle="dropdown">
36 " class="user-image" alt="User
Image"/>
37 <span class="hidden-xs"><?php echo $this
->session->userdata('logged_in')['
firstname']; ?></span>
38 </a>
39 <ul class="dropdown-menu">
40 <li class="user-header">
41 " class="img-circle" alt="User
Image" />
42 <p>
43 <?php echo $this->session->userdata(
'logged_in')['fullname']; ?>
44 <small style="color:#00c0ef;">
<?php echo $this->session->userdata('logged_in
')['usertype']; ?></small>
45 </p>

```

```

46 </li>
47 <li class="user-footer">
48 <div class="pull-left">
49 <a href="<?php echo base_url('
dashboard'); ?>" class="btn btn-default
btn-flat">Dashboard</a>
50 </div>
51 <div class="pull-right">
52 <a href="<?php echo base_url('
authenticate/logout'); ?>" class="btn btn-
default btn-flat">Sign out</a>
53 </div>
54 </li>
55 </ul>
56 </li>
57 <li>
58 <a href="#" data-toggle="control-
sidebar"><i class="fa fa-gears"></i></a>
59 </li>
60 </ul>
61 </div>
62 </nav>
63 </header>
64 <aside class="main-sidebar">
65 <section class="sidebar">
66 <div class="user-panel">
67 <div class="pull-left image">
68 "
class="img-circle" alt="User Image" />
69 </div>
70 <div class="pull-left info">
71 <p><?php echo $this->session->userdata('
logged_in')['fullname']; ?></p>
72 <span class="glyphicon glyphicon-user">
73 </span><span style="margin-left:5%;
color:#00c0ef;"><?php echo $this->session->
userdata('logged_in')['usertype']; ?></
span>
74 </div>
75 </div>
76 <ul class="sidebar-menu">
77 <li class="header"><?php echo $this->session
->userdata('logged_in')['projectName'];
?></li>
78 <li>
79 <a href="#"><i class="glyphicon
glyphicon-tasks"></i> <span>Project</span>
80 <span class="fa fa-angle-left pull-right">
81 </span></a>
82 <ul class="treeview-menu">
83 <li><a href="<?php echo base_url('
singleproject/index'); ?>"><i class='
glyphicon glyphicon-chevron-right'></i>
84 About</a></li>
85 <li style="display:<?php echo ($this->
session->userdata('logged_in')['
usertypeId'] == 1 ? 'none' : ''); ?>"><a
href="<?php echo base_url('singleproject/edit')
; ?>"><i class='glyphicon glyphicon-
chevron-right'></i>Update</a></li>
86 </ul>
87 </li>
88 <li class="active">
89 <a href="#"><i class='glyphicon
glyphicon-tasks'></i> <span>Specimen</
span> <i class="fa fa-angle-left pull-
right"></i></a>
90 <ul class="treeview-menu">
91 <li style="display:<?php echo ($this->
session->userdata('logged_in')['
usertypeId'] == 1 ? 'none' : ''); ?>"><a
href="<?php echo base_url('specimen/create');
?>"><i class='glyphicon glyphicon-
chevron-right'></i>New Sample</a></li>
92 <li class="active"><a href="<?php
echo base_url('specimen/index'); ?>"><i class='
glyphicon glyphicon-chevron-right'></i>
93 Sample List</a></li>
94 </ul>
95 </li>
96 <li>
97 <a href="#"><i class='glyphicon
glyphicon-tasks'></i> <span>Access</span>
98 <span class="fa fa-angle-left pull-right">
99 </span></a>
100 <ul class="treeview-menu">

```

```

94         <li><a href="<?= base_url('
specimen/access ');?>"><i class='glyphicon147
glyphicon-chevron-right '></i>Sample
Access</a></li>
95         <li style="display:<?=(($this->
session->userdata('logged_in')[
usertypeId ] == 1 ? 'none' : '' )?>"><a
href="<?= base_url('specimen/logs ');?>">
96         <i class='glyphicon glyphicon-chevron-
right '></i>Sample Access Logs</a></li>
97     </ul>
98     <li style="display:<?=(($this->session
->userdata('logged_in')[ 'usertypeId ] ==
1 ? 'none' : '' )?>">
99         <a href="<?= base_url('reports ');?>"
><i class='glyphicon glyphicon-tasks '></i>
100         <span>Reports</span></a>
101     </li>
102 </ul>
103 </section>
104 </aside>
105 <div class="content-wrapper">
106 <section class="content-header">
107     <h1>
108         <?php echo $pageHeader; ?>
109     <small></small>
110 </h1>
111 <ol class="breadcrumb">
112     <li><a href="#"><i class="fa fa-
dashboard"></i><?php echo $pageTitle;
?></a></li>
113     <li class="active"><?php echo
$pageHeader; ?></li>
114 </ol>
115 </section>
116 <?php if ( isset( $message ) ) : ?>
117 <div class="col-xs-offset-0 col-xs-12">
118 <div class="alert alert-success alert-
dismissable">
119     <button type="button" class="close" data-
dismiss="alert" aria-hidden="true"> </
button>
120     <h4><i class="icon fa fa-check"></i> <?php
echo $message; ?></h4>
121 </div>
122 </div>
123 <?php endif; ?>
124 <section class="content">
125     <div class="row">
126         <div class="col-xs-12">
127             <div class="box">
128                 <div class="box-header">
129                     <h3 class="box-title">
130                         Specimen Samples</h3>
131                 </div>
132                 <div class="box-body">
133                     <table id="example1" class="
table table-bordered table-hover">
134                         <thead>
135                             <tr>
136                                 <th>Specimen Sample
Barcode</th>
137                                 <th>Specimen Type</th>
138                                 <th>Current Volume</th>
139                             </tr>
140                         </thead>
141                         <tbody>
142                             <?php if ( $samples != null
) : ?>
143                                 <?php foreach( $samples as
$row )?>
144                                     <tr style="color:<?=( $row
->current_volume <= 100 ? 'red' : '' )?>">
145                                         <td>
146                                             <a href="<?=
base_url('specimen/view/'. $row->id );?>">
147                                                 <?=$row->barcode?>
148                                             </a>
149                                         </td>
150                                         <td><?=$row->stname
?></td>
151                                         <td><?=$row->
current_volume?></td>
152                                     </tr>
153                                 <?php endforeach;?>
154                                 <?php else: ?>
155                                     <tr>
156                                         <td>no available data
</td>
157                                         <td></td>
158                                         <td></td>
159                                     </tr>
160                                 <?php endif; ?>
161                             </tbody>
162                         </table>
163                     </div>
164                 <div class="box">
165                     <h3 class="box-title">
166                         Barcode</h3>
167                     <table>
168                         <thead>
169                             <tr>
170                                 <th>Specimen Type</th>
171                                 <th>Current Volume</th>
172                             </tr>
173                         </thead>
174                         <tbody>
175                             <tr>
176                                 <td></td>
177                                 <td></td>
178                             </tr>
179                         </tbody>
180                     </table>
181                 </div>
182             </div>
183         </div>
184     </div>
185 </section>
186 </div>
187 <div class="main-footer">
188     <div class="pull-right hidden-xs">
189         <strong>Copyright &copy; 2015 <a href="#">
IMBB</a>. </strong> All rights reserved.
190     </div>
191     " width="35px"
></img>
192     " width="35
px"></img>
193     " width="35
px"></img>
194 </div>
195 </div>
196 <script src="<?php echo base_url("public_html/
vendor/plugins/jquery/jquery-2.1.4.min.js
"); ?>"></script>
197 <script src="<?php echo base_url("public_html/
vendor/bootstrap/js/bootstrap.min.js");
?>" type="text/javascript"></script>
198 <script src="<?php echo base_url("public_html/
vendor/adminlte/js/app.min.js"); ?>" type
="text/javascript"></script>
199 <script src="<?php echo base_url("public_html/
vendor/plugins/datatables/jquery.
dataTables.min.js"); ?>" type="text/
javascript"></script>
200 <script src="<?php echo base_url("public_html/
vendor/plugins/datatables/dataTables.
bootstrap.min.js"); ?>" type="text/
javascript"></script>
201 <script type="text/javascript">
$(function () {
    $('#example1').dataTable();
});
</script>
202 </body>
203 </html>

```

### Listing 38: Specimen/logs.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4     <meta charset="UTF-8">
5     <title>IMBB BSSMS | Dashboard</title>
6     <meta content="width=device-width, initial-
scale=1, maximum-scale=1, user-scalable=
no" name="viewport">
7     <link href="<?php echo base_url("public_html13
/vendor/bootstrap/css/bootstrap.css"); ?>
" rel="stylesheet" type="text/css" />
8     <link href="https://maxcdn.bootstrapcdn.com/
font-awesome/4.3.0/css/font-awesome.min.
css" rel="stylesheet" type="text/css" />
9     <link href="https://code.ionicframework.com/
ionicons/2.0.1/css/ionicons.min.css" rel=
"stylesheet" type="text/css" />
10 <link href="<?php echo base_url("public_html
/vendor/plugins/datatables/dataTables.
bootstrap.css"); ?>" rel="stylesheet"
type="text/css" />
11 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/AdminLTE.min.css");
?>" rel="stylesheet" type="text/css" />
12 <link href="<?php echo base_url("public_html
/vendor/plugins/iCheck/square/blue.css");
?>" rel="stylesheet" type="text/css" />
13 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/skins/skin-blue.css"
); ?>" rel="stylesheet" type="text/css" />
14 <link href="<?php echo base_url("public_html
/assets/css/system.css"); ?>" rel="
stylesheet" type="text/css" />
15 <!--[if lt IE 9]>

```

```

16 <script src="https://oss.maxcdn.com/html5shiv/3.7.2/html5shiv.min.js"></script>
17 <script src="https://oss.maxcdn.com/respond/1.4.2/respond.min.js"></script>
18 <![endif]-->
19 </head>
20
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23 <header class="main-header">
24 <a href="<?= base_url('dashboard');?>" class="logo">
25 <span class="logo-mini"><b>BSS</b></span>
26 <span class="logo-lg"><b>IMBB BSSMS</b></span>
27 </a>
28 <nav class="navbar navbar-static-top" role="navigation">
29 <a href="#" class="sidebar-toggle" data-toggle="offcanvas" role="button">
30 <span class="sr-only">Toggle navigation
31 </span>
32 </a>
33 <div class="navbar-custom-menu">
34 <ul class="nav navbar-nav">
35 <li class="dropdown user user-menu">
36 <a href="#" class="dropdown-toggle" data-toggle="dropdown">
37 
38 <span class="hidden-xs"><?= $this->session->userdata('logged_in')[ 'first_name' ]; ?></span>
39 <ul class="dropdown-menu">
40 <li class="user-header">
41 
42 <p>
43 <?= $this->session->userdata('logged_in')[ 'full_name' ]; ?>
44 <small style="color:#00c0ef;"><?= $this->session->userdata('logged_in')[ 'usertype' ]; ?></small>
45 </p>
46 </li>
47 <li class="user-footer">
48 <div class="pull-left">
49 <a href="<?= base_url('dashboard');?>" class="btn btn-default btn-flat">Dashboard</a>
50 </div>
51 <div class="pull-right">
52 <a href="<?= base_url('authenticate/logout');?>" class="btn btn-default btn-flat">Sign out</a>
53 </div>
54 </li>
55 </ul>
56 </li>
57 <li>
58 <a href="#" data-toggle="control-sidebar"><i class="fa fa-gears"></i></a>
59 </li>
60 </ul>
61 </div>
62 </nav>
63 </header>
64 <aside class="main-sidebar">
65 <section class="sidebar">
66 <div class="user-panel">
67 <div class="pull-left image">
68 
69 </div>
70 <div class="pull-left info">
71 <p><?= $this->session->userdata('logged_in')[ 'full_name' ]; ?></p>
72 <span class="glyphicon glyphicon-user"></span><span style="margin-left:5%; color:#00c0ef;"><?= $this->session->userdata('logged_in')[ 'usertype' ]; ?></span>
73 </div>
74 </div>
75 <ul class="sidebar-menu">
76 <li class="header"><?= $this->session->userdata('logged_in')[ 'project_name' ]; ?></li>
77 <li>
78 <a href="#"><i class="glyphicon glyphicon-tasks"></i> <span>Project </span>

```

```

133         <div class="box-body"> 177
134         <table id="example1" class="table 178
table-bordered table-hover" data-order=' 179
[[ 0, "desc" ]]> 180
135         <thead> 181
136         <tr> 182
137         <th>Date/Time</th> 183
138         <th>Sample</th> 184
139         <th>Amount Obtained</th> 185 </section>
140         <th>Test</th> 186 </div>
141         <th>User</th> 187 <footer class="main-footer">
142         </tr> 188 <div class="pull-right hidden-xs">
143         </thead> 189 <strong>Copyright &copy; 2015 <a href="#">
144         <tbody> 190 IMBB</a>.</strong> All rights reserved.
145         <?php if( $samples != null ) 191 </div>
?> <?php foreach( $samples as $row 192  <?php foreach( $samples as $row 193  194 <td><?=$row->timestamp?></td> 195 <?=$row->barcode?></td> 196 <td><?=$row->amount?></td> 197 <?=$row->barcode?></td> 198 <td><?=$row->amount?></td> 199 <td><?=$row->name?></td> 200 <td><?=$row->name?></td>
150         <td><?=$row->amount?></td> 201 <td><?=$row->amount?></td>
151         <td><?=$row->name?></td> 202 <td><?=$row->name?></td>
152         <?php if ( $this->session-> 194 <?php if ( $this->session-> 195 userdata( 'logged_in' ) [ 'projectId' ] == 196 $row->pid) : ?>
153         <td><?=$row->firstname?> <?=$row->lastname?></td> 197 <td><?=$row->firstname?> <?=$row->lastname?></td>
154         <?php else : ?> 198 <td><?=$row->pname?></td> 199 <?php else : ?>
155         <td><?=$row->pname?></td> 200 <td><?=$row->pname?></td>
156         <?php endif;?> 201 <td><?=$row->pname?></td>
157         </tr> 202 <td><?=$row->pname?></td>
158         <?php endforeach;?> 203 <td><?=$row->pname?></td>
159         <?php else : ?> 204 <td><?=$row->pname?></td>
160         <tr> 205 <td><?=$row->pname?></td>
161         <td>no available data</td> 206 <td><?=$row->pname?></td>
162         <td></td> 207 <td><?=$row->pname?></td>
163         <td></td> 208 <td><?=$row->pname?></td>
164         <td></td>
165         <td></td>
166         </tr>
167         <?php endif; ?>
168         </tbody>
169         <tfoot>
170         <tr>
171         <th>Date/Time</th>
172         <th>Sample</th>
173         <th>Amount Obtained</th>
174         <th>Test</th>
175         <th>User</th>
176         </tr>

```

Listing 39: Specimen/view.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content='width=device-width, initial-
scale=1, maximum-scale=1, user-scalable=
no' name='viewport'>
7 <link href="<?php echo base_url("public_html
/vendor/bootstrap/css/bootstrap.css"); ?>"
rel="stylesheet" type="text/css" />
8 <link href="https://maxcdn.bootstrapcdn.com/3.0/
font-awesome/4.3.0/css/font-awesome.min.
css" rel="stylesheet" type="text/css" />
9 <link href="https://code.ionicframework.com/2.0.1/
css/ionicons.min.css" rel="stylesheet" type="text/css" />
10 <link href="<?php echo base_url("public_html
/vendor/plugins/datatables/dataTables.bootstrap.css"); ?>"
rel="stylesheet" type="text/css" />
11 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/AdminLTE.min.css"); ?>"
rel="stylesheet" type="text/css" />
12 <link href="<?php echo base_url("public_html
/vendor/plugins/iCheck/square/blue.css"); ?>"
rel="stylesheet" type="text/css" />
13 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/skins/skin-blue.css"); ?>"
rel="stylesheet" type="text/css" />
14 <link href="<?php echo base_url("public_html
/assets/css/system.css"); ?>" rel="stylesheet" type="text/css" />
15 <!--[if lt IE 9]>
16 <script src="https://oss.maxcdn.com/html5shiv/3.7.2/
html5shiv.min.js"></script>
17 <script src="https://oss.maxcdn.com/respond/1.4.2/
respond.min.js"></script>
18 <![endif]-->
19 </head>
20
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23 <header class="main-header">
24 <a href="<?=$base_url('dashboard'); ?>" class="logo">
25 <span class="logo-mini"><b>BSS</b>MS</span>
26 <span class="logo-lg"><b>IMBB BSSMS</b></span>
27 </a>
28 <nav class="navbar navbar-static-top" role="navigation">
29 <a href="#" class="sidebar-toggle" data-toggle="offcanvas"
role="button">
30 <span class="sr-only">Toggle navigation
31 </span>
32 </a>
33 <div class="navbar-custom-menu">
34 <ul class="nav navbar-nav">
35 <li class="dropdown user user-menu">
36 <a href="#" class="dropdown-toggle" data-toggle="dropdown">
37 "
class="user-image" alt="User Image" />
38 <span class="hidden-xs"><?=$this->session->userdata( 'logged_in' ) [ '
firstname' ]; ?></span>
39 </a>
40 <ul class="dropdown-menu">
41 <li class="user-header">
42 "
class="img-circle" alt="User Image" />
43 <p>
44 <?=$this->session->userdata( 'logged_in' ) [ 'fullname' ]; ?>
45 <small style="color:#00c0ef;"><?=$this->session->userdata( 'logged_in' ) [ 'usertype' ]; ?></small>
46 </p>
47 </li>
48 <li class="user-footer">
49 <div class="pull-left">

```

```

49         <a href="<?= base_url('
dashboard ');?>" class="btn btn-default
btn-flat">Dashboard</a>
50     </div>
51     <div class="pull-right">
52         <a href="<?= base_url('
authenticate/logout ');?>" class="btn btn-
default btn-flat">Sign out</a>
53     </div>
54 </li>
55 </ul>
56 </li>
57 </li>
58     <a href="#" data-toggle="control-
sidebar"><i class="fa fa-gears"></i></a>
59 </li>
60 </ul>
61 </div>
62 </nav>
63 </header>
64 <aside class="main-sidebar">
65 <section class="sidebar">
66 <div class="user-panel">
67 <div class="pull-left image">
68 
69 </div>
70 <div class="pull-left info">
71 <p><?= $this->session->userdata('
logged_in')[ 'fullname' ]; ?></p>
72 <span class="glyphicon glyphicon-user"
></span><span style="margin-left:5%;
color:#00c0ef;"><?= $this->session->
userdata('logged_in')[ 'usertype' ]; ?></
span>
73 </div>
74 </div>
75 <ul class="sidebar-menu">
76 <li class="header"><?= $this->session
->userdata('logged_in')[ 'projectName' ];
?></li>
77 </li>
78 <a href="#"><i class='glyphicon
glyphicon-tasks '></i> <span>Project</span>
> <i class="fa fa-angle-left pull-right"
></i></a>
79 <ul class="treeview-menu">
80 <li><a href="<?= base_url('
singleproject/index ');?>"><i class='
glyphicon glyphicon-chevron-right '></i>
About</a></li>
81 <li style="display:<?=( $this->
session->userdata('logged_in')[ '
usertypeId' ] == 1 ? 'none' : '' )?>"><a
href="<?= base_url('singleproject/edit ');
?>"><i class='glyphicon glyphicon-
chevron-right '></i>Update</a></li>
82 </ul>
83 </li>
84 <li class="active">
85 <a href="#"><i class='glyphicon
glyphicon-tasks '></i> <span>Specimen</
span> <i class="fa fa-angle-left pull-
right"></i></a>
86 <ul class="treeview-menu">
87 <li style="display:<?=( $this->
session->userdata('logged_in')[ '
usertypeId' ] == 1 ? 'none' : '' )?>"><a
href="<?= base_url('specimen/create ');?>"
><i class='glyphicon glyphicon-chevron-
right '></i>New Sample</a></li>
88 <li class="active"><a href="<?=
base_url('specimen/index ');?>"><i class='
glyphicon glyphicon-chevron-right '></i>
Sample List</a></li>
89 </ul>
90 </li>
91 </li>
92 <a href="#"><i class='glyphicon
glyphicon-tasks '></i> <span>Access</span>
> <i class="fa fa-angle-left pull-right"
></i></a>
93 <ul class="treeview-menu">
94 <li><a href="<?= base_url('
specimen/access ');?>"><i class="glyphicon
glyphicon-chevron-right '></i>Sample
Access</a></li>
95 <li style="display:<?=( $this->
session->userdata('logged_in')[ '
usertypeId' ] == 1 ? 'none' : '' )?>"><a
href="<?= base_url('specimen/logs ');?>"
><i class='glyphicon glyphicon-chevron-
right '></i>Sample Access Logs</a></li>
96 </ul>
97 </li>
98 <li style="display:<?=( $this->session
->userdata('logged_in')[ 'usertypeId' ] ==
1 ? 'none' : '' )?>"
99         <a href="<?= base_url('reports ');?>"
><i class='glyphicon glyphicon-tasks '></i>
> <span>Reports</span></a>
100     </li>
101 </ul>
102 </section>
103 </aside>
104 <div class="content-wrapper">
105 <section class="content-header">
106 <h1>
107 <?php echo $pageHeader; ?>
108 <small></small>
109 </h1>
110 <ol class="breadcrumb">
111 <li><a href="#"><i class="fa fa-
dashboard"></i> <?php echo $pageTitle;
?></a></li>
112 <li class="active"><?php echo
$pageHeader; ?></li>
113 </ol>
114 </section>
115 </div>
116 <?php if ( isset( $message ) ) : ?>
117 <div class="col-xs-offset-0 col-xs-12">
118 <div class="alert alert-<?php echo $message
['type ']; ?> alert-dismissible">
119 <button type="button" class="close" data-
dismiss="alert" aria-hidden="true"> </
button>
120 <h4><i class="icon fa fa-<?php echo
$message['icon ']; ?>"></i> <?php echo
$message['text ']; ?></h4>
121 </div>
122 </div>
123 <?php endif; ?>
124 <section class="content">
125 <div class="row">
126 <div class="col-xs-12">
127 <div class="box">
128 <div class="box-header with-border">
129 <h3 class="box-title">Specimen
Sample Information</h3>
130 </div>
131 <div class="box-body">
132 <table id="example1" class="table
table-bordered">
133 <thead>
134 <tr>
135 <th>Shared with Project</th>
136 <th>Specimen Sample Barcode
</th>
137 <th>Collection Date</th>
138 <th>Original Volume</th>
139 <th>Current Volume</th>
140 <th>Specimen Type</th>
141 </tr>
142 </thead>
143 <tbody>
144 <tr>
145 <td><?php if ( $sharedProjects
!= null ):?>
146 <td><?php foreach(
$sharedProjects as $row):?> <?=$row->
pname?> <br/> <?php endforeach;?></td>
147 <td><?php else: ?>
148 <td></td>
149 <td><?php endif;?>
150 <td><?=$sampleInfo->barcode
?></td>
151 <td><?=$sampleInfo->
collection_date?></td>
152 <td><?=$sampleInfo->
original_volume?></td>
153 <td><?=$sampleInfo->
current_volume?></td>
154 <td><?=$sampleInfo->sname
?></td>
155 </tr>
156 </tbody>
157 </table>
158 </div>
159 <div class="box-footer" style="
display: <?=( $this->session->userdata('
logged_in')[ 'usertype' ] == 'Project Head'
? : 'none' );?>">
160 <div class="pull-right hidden-xs">
161 <a href="<?= base_url('specimen/
edit/1/'. $sampleId);?>" class="btn btn-
primary">Edit</a>
162 </div>
163 </div>
164 </div>
165 </div>
166 </div>
167 </div>
168 <div class="row">
169 <div class="col-xs-12">
170 <div class="box">
171

```



```

172         <div class="box-header with-border">250
173         <h3 class="box-title">Source 251
Information </h3> 252
174     </div> 253
175     <div class="box-body"> 254
176     <table class="table table-bordered"> 255
"> 256
177         <thead> 257
178         <tr> 258
179             <th>First Name</th> 259
180             <th>Last Name</th> 260
181             <th>Sex</th> 261
182             <th>Date of Birth</th>
183             <th>Hospital Name</th> 262
184         </tr> 263
185     </thead> 264
186     <tbody>
187     <?php foreach( $sourceInfo as 265
$row):?> 266
188     <tr> 267
189         <td><?=$row->firstname?></td> 268
190         <td><?=$row->lastname?></td> 269
191         <td><?=$row->sex?></td> 270
192         <td><?=$row->birthdate?></td> 271
193         <td><?=$row->hospital_name 272
?></td> 273
194     </tr> 274
195     <?php endforeach?> 275
196     </tbody> 276
197     </table> 277
198     </div> 278
199     <div class="box-footer" style=" 279
display: <?=( $this->session->userdata(' 281
logged_in')[ 'usertype' ] == 'Project Head 282
? : 'none' )?>"> 283
200     <div class="pull-right hidden-xs">
201     <a href="<? = base_url('specimen/ 284
edit/2/'. $sampleId);?>" class="btn btn- 285
primary">Edit</a> 286
202     </div> 287
203     </div> 288
204     </div> 289
205     </div>
206 </div>
207
208 <div class="row"> 290
209 <div class="col-xs-12"> 291
210 <div class="box">
211 <div class="box-header with-border">
212 <h3 class="box-title">Test 292
Information </h3> 293
213 </div> 294
214 <div class="box-body"> 295
215 <table class="table table-bordered"> 296
"> 297
216     <thead> 298
217     <tr> 299
218         <th>Test</th> 300
219         <th>Amount</th> 301
220         <th>Result</th> 302
221         <th>Notes</th> 303
222     </tr> 304
223     </thead>
224     <tbody>
225     <?php if( $testInfo != null ) :
?> 305
226     <?php foreach( $testInfo as $row 306
):?>
227     <tr> 307
228         <td><?=$row->name?></td> 308
229         <td><?=$row->amount?></td> 309
230         <td><?=$row->result == 310
null ? ' : ( $row->result == 0 ? ' 311
negative' : 'positive' )?></td> 312
231         <td><?=$row->notes?></td> 313
232     </tr> 314
233     <?php endforeach?> 315
234     <?php else: ?>
235     <tr>
236         <td>no available data</td>
237         <td></td>
238         <td></td>
239         <td></td>
240     </tr>
241     <?php endif; ?>
242     </tbody>
243     </table>
244     </div>
245     <?php if($testInfo != null) : ?> 315
246     <div class="box-footer" >
247     <div class="pull-right hidden-xs">
248     <a href="<? = base_url('specimen/ 316
edit/3/'. $sampleId);?>" class="btn btn- 317
primary">Edit</a>
249     </div>

```

## Listing 40: SystemLogs/index.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content='width=device-width, initial-
  scale=1, maximum-scale=1, user-scalable=
  no' name='viewport' />
7 <link href="<?php echo base_url("public_html
  /vendor/bootstrap/css/bootstrap.css"); ?>"
  rel="stylesheet" type="text/css" />
8 <link href="https://maxcdn.bootstrapcdn.com/
  font-awesome/4.3.0/css/font-awesome.min.
  css" rel="stylesheet" type="text/css" />
9 <link href="https://code.ionicframework.com/
  ionic/2.0.1/css/ionic.min.css" rel="
  stylesheet" type="text/css" />
10 <link href="<?php echo base_url("public_html
  /vendor/plugins/datatables/dataTables.
  bootstrap.css"); ?>" rel="stylesheet"
  type="text/css" />
11 <link href="<?php echo base_url("public_html
  /vendor/adminlte/css/AdminLTE.min.css");
  ?>" rel="stylesheet" type="text/css" />
12 <link href="<?php echo base_url("public_html
  /vendor/plugins/iCheck/square/blue.css");
  ?>" rel="stylesheet" type="text/css" />
13 <link href="<?php echo base_url("public_html
  /vendor/adminlte/css/skins/skin-blue.css"
  ); ?>" rel="stylesheet" type="text/css"
  />
14 <link href="<?php echo base_url("public_html
  /assets/css/system.css"); ?>" rel="
  stylesheet" type="text/css" />
15 <!--[if lt IE 9]>
16 <script src="https://oss.maxcdn.com/
  html5shiv/3.7.2/html5shiv.min.js"></
  script>
17 <script src="https://oss.maxcdn.com/respond
  /1.4.2/respond.min.js"></script>
18 <![endif]-->
19 </head>
20
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23 <header class="main-header">
24 <a href="<?= base_url('dashboard'); ?>" class
  ="logo">
25 <span class="logo-mini"><b>BSS</b>MS</span>
26 <span class="logo-lg"><b>IMBB BSSMS</b></
  span>
27 </a>
28 <nav class="navbar navbar-static-top" role="
  navigation">
29 <a href="#" class="sidebar-toggle" data-
  toggle="offcanvas" role="button">
30 <span class="sr-only">Toggle navigation
  </span>
31 </a>
32 <div class="navbar-custom-menu">
33 <ul class="nav navbar-nav">
34 <li class="dropdown user user-menu">
35 <a href="#" class="dropdown-toggle"
  data-toggle="dropdown">
36 " class="user-image" alt="User
  Image" />
37 <span class="hidden-xs"><?= $this
  ->session->userdata('logged_in')[
  'firstname']; ?></span>
38 </a>
39 <ul class="dropdown-menu">
40 <li class="user-header">
41 " class="img-circle" alt="User
  Image" />
42 <p>
43 <?= $this->session->userdata(
  'logged_in')['fullname']; ?>
44 <small style="color:#00c0ef;"
  ><?= ($this->session->userdata('logged_in
  ')[ 'is_sysadmin' ] ? 'System Administrator
  ' : '' ) ?></small>
45 </p>
46 </li>
47 <li class="user-footer">
48 <div class="pull-right">
49 <a href="<?= base_url('
  authenticate/logout'); ?>" class="btn btn
  default btn-flat">Sign out</a>
50 </div>
51 </li>
52 </ul>
53 </div>
54
55
56
57
58
59 </nav>
60 </header>
61 <aside class="main-sidebar">
62 <section class="sidebar">
63 <div class="user-panel">
64 <div class="pull-left image">
65 "
  class="img-circle" alt="User Image" />
66 </div>
67 <div class="pull-left info">
68 <p><?= $this->session->userdata('
  logged_in')['fullname']; ?></p>
69 </div>
70 </div>
71 <ul class="sidebar-menu">
72 <li class="header"></li>
73 <li class="treeview">
74 <a href="#"><i class="glyphicon
  glyphicon-tasks"></i> <span>Projects </
  span></a>
75 <ul class="treeview-menu">
76 <li><a href="<?= base_url('
  projects/create'); ?>"><i class="glyphicon
  glyphicon-chevron-right"></i> New Project
  </a></li>
77 <li><a href="<?= base_url('
  projects'); ?>"><i class="glyphicon
  glyphicon-chevron-right"></i> Project List
  </a></li>
78 </ul>
79 </li>
80 <li class="treeview">
81 <a href="#"><i class="glyphicon
  glyphicon-tasks"></i> <span>Users </
  span></a>
82 <ul class="treeview-menu">
83 <li><a href="<?= base_url('
  users/create'); ?>"><i class="glyphicon
  glyphicon-chevron-right"></i> New User </a
  ></li>
84 <li><a href="<?= base_url('
  users'); ?>"><i class="glyphicon glyphicon
  glyphicon-chevron-right"></i> User List </a></li>
85 </ul>
86 </li>
87 <li class="active">
88 <a href="<?= base_url('
  systemlogs'); ?>"><i class="glyphicon
  glyphicon-tasks"></i> <span>Audit Trail </
  span></a>
89 </li>
90 </ul>
91 </section>
92 </aside>
93
94 <div class="content-wrapper">
95 <section class="content-header">
96 <h1>
97 <?php echo $pageHeader; ?>
98 <small></small>
99 </h1>
100 <ol class="breadcrumb">
101 <li><a href="#"><i class="fa fa-
  dashboard"></i> <?php echo $pageTitle;
  ?></a></li>
102 <li class="active"><?php echo
  $pageHeader; ?></li>
103 </ol>
104 </section>
105 <section class="content">
106 <div class="row">
107 <div class="col-xs-12">
108 <div class="box">
109 <div class="box-header">
110 <h3 class="box-title"></h3>
111 </div><!-- /.box-header -->
112 <div class="box-body">
113 <table id="example1" class="table
  table-bordered table-hover" data-order="
  [[ 0, "desc" ] ]>
114 <thead>
115 <tr>
116 <th>Timestamp</th>
117 <th>User</th>
118 <th>Log</th>
119 </tr>
120 </thead>
121 <tbody>
122 <?php if( $systemLogs
  != null ) : ?>
123 <?php foreach($systemLogs as
  $row):?>

```

```

124         <tr>
125         <td><?=$row->timestamp?></td>
126         <td><?=$row->firstname?> <?=$row->lastname?></td>
127         <td><?=$row->log?></td>
128     </tr>
129     <?php endforeach;?>
130     <?php else: ?>
131     <tr>
132     <td>no available
133     data</td>
134     <td></td>
135     <td></td>
136     </tr>
137 </tbody>
138 </tfoot>
139 </table>
140 <th>Timestamp</th>
141 <th>User</th>
142 <th>Log</th>
143 </tr>
144 </tfoot>
145 </table>
146 </div>
147 </div>
148 </div>
149 </div>
150 </section>
151 </div>
152 <footer class="main-footer">
153 <div class="pull-right hidden-xs">
154 <strong>Copyright &copy; 2015 <a href="#">
155     IMBB</a></strong> All rights reserved.
156 </div>
157 " width="35px"
159 ></img>
160 " width="35
162     px"></img>
163 " width="35
165     px"></img>
166 </footer>
167 </div>
168 </div>
169 </div>
170 <script src="<?php echo base_url("public_html/
171     vendor/plugins/jquery/jquery-2.1.4.min.js
172 "); ?>"></script>
173 <script src="<?php echo base_url("public_html/
174     vendor/bootstrap/js/bootstrap.min.js");
175     ?>" type="text/javascript"></script>
176 <script src="<?php echo base_url("public_html/
177     vendor/adminlte/js/app.min.js"); ?>" type
178     ="text/javascript"></script>
179 <script src="<?php echo base_url("public_html/
180     vendor/plugins/datatables/jquery.
181     dataTables.min.js"); ?>" type="text/
182     javascript"></script>
183 <script src="<?php echo base_url("public_html/
184     vendor/plugins/datatables/dataTables.
185     bootstrap.min.js"); ?>" type="text/
186     javascript"></script>
187 </div>
188 </div>
189 <script>
190 $(document).ready(function() {
191     $('#example1').DataTable();
192 });
193 </script>
194 </body>
195 </html>

```

## Listing 41: User/create.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content="width=device-width, initial-
7     scale=1, maximum-scale=1, user-scalable=
8     no" name="viewport">
9 <link href="<?php echo base_url("public_html/
10     vendor/bootstrap/css/bootstrap.css"); ?>
11     " rel="stylesheet" type="text/css" />
12 <link href="https://maxcdn.bootstrapcdn.com/
13     font-awesome/4.3.0/css/font-awesome.min.
14     css" rel="stylesheet" type="text/css" />
15 <link href="https://code.ionicframework.com/
16     icons/2.0.1/css/ionicons.min.css" rel="
17     stylesheet" type="text/css" />
18 <link href="<?php echo base_url("public_html/
19     vendor/plugins/datatables/dataTables.
20     bootstrap.css"); ?>" rel="stylesheet"
21     type="text/css" />
22 <link href="<?php echo base_url("public_html
23     /vendor/adminlte/css/AdminLTE.min.css");
24     ?>" rel="stylesheet" type="text/css" />
25 <link href="<?php echo base_url("public_html
26     /vendor/plugins/iCheck/square/blue.css");
27     ?>" rel="stylesheet" type="text/css" />
28 <link href="<?php echo base_url("public_html
29     /vendor/adminlte/css/skins/skin-blue.css"
30     ); ?>" rel="stylesheet" type="text/css"
31     />
32 <link href="<?php echo base_url("public_html/
33     /assets/css/system.css"); ?>" rel="
34     stylesheet" type="text/css" />
35 <!--[if lt IE 9]>
36 <script src="https://oss.maxcdn.com/
37     html5shiv/3.7.2/html5shiv.min.js"></
38     script>
39 <script src="https://oss.maxcdn.com/respond
40     /1.4.2/respond.min.js"></script>
41 </[endif]>
42 </head>
43 <body class="skin-blue sidebar-mini">
44 <div class="wrapper">
45 <header class="main-header">
46 <a href="<?php echo base_url('dashboard'); ?>"
47     class="logo">
48 <!-- mini logo for sidebar mini 50x50
49     pixels -->
50 <span class="logo-mini"><b>BSS</b></span>
51 <!-- logo for regular state and mobile
52     devices -->
53 <span class="logo-lg"><b>IMBB BSSMS</b></span>
54 </a>
55 <nav class="navbar navbar-static-top" role="
56     navigation">
57 <a href="#" class="sidebar-toggle" data-
58     toggle="offcanvas" role="button">
59 <span class="sr-only">Toggle navigation
60 </span>
61 </a>
62 <div class="navbar-custom-menu">
63 <ul class="nav navbar-nav">
64 <li class="dropdown user user-menu">
65 <a href="#" class="dropdown-toggle"
66     data-toggle="dropdown">
67 " class="user-image" alt="User
70     Image" />
71 <span class="hidden-xs"><?php echo $this
72     ->session->userdata('logged_in')['
73     firstname']; ?></span>
74 </a>
75 <ul class="dropdown-menu">
76 <li class="user-header">
77 <a href="#" class="base_url("
78     public_html/vendor/adminlte/img/avatar.
79     png"); ?>" class="img-circle" alt="User
80     Image" />
81 <p>
82 <?php echo $this->session->userdata('
83     logged_in')['fullname']; ?>
84 <small style="color:#0000ef;"
85     ><?php echo $this->session->userdata('
86     logged_in')['is_sysadmin'] ? 'System
87     Administrator' : '' ?></small>
88 </p>
89 </li>
90 <li class="user-footer">
91 <div class="pull-right">
92 <a href="<?php echo base_url('
93     authenticate/logout'); ?>" class="btn
94     btn-default btn-flat">Sign out</a>
95 </div>
96 </li>
97 </ul>
98 </li>
99 <li>
100 <a href="#" data-toggle="control-
101     sidebar"><i class="fa fa-gears"></i></a>
102 </li>
103 </ul>
104 </div>
105 </nav>
106 </header>
107 <aside class="main-sidebar">
108 <section class="sidebar">
109 <div class="user-panel">
110 <div class="pull-left image">
111 "
113     class="img-circle" alt="User Image" />
114 </div>
115 <div class="pull-left info">
116 <p><?php echo $this->session->userdata('

```

```

logged_in ')[ 'fullname']; ?></p>
71 </div>
72 </div>
73 <ul class="sidebar-menu">
74 <li class="header"></li>
75 <li class="treeview">
76 <a href="#"><i class="glyphicon">
glyphicon-tasks </i> <span>Projects </
span></a>
77 <ul class="treeview-menu">
78 <li><a href="#"><? base_url('
projects/create');?><i class="glyphicon"
glyphicon-chevron-right ></i>New Project<
/a></li>
79 <li><a href="#"><? base_url('
projects');?><i class="glyphicon"
glyphicon-chevron-right ></i>Project List<
/a></li>
80 </ul>
81 </li>
82 <li class="active">
83 <a href="#"><i class="glyphicon">
glyphicon-tasks ></i></a> <span>Users </
span></li>
84 <ul class="treeview-menu">
85 <li class="active"><a href="#"
<? base_url('users/create');?><i class="
glyphicon glyphicon-chevron-right" ></i>
New User </a></li>
86 <li><a href="#"><? base_url('
users');?><i class="glyphicon glyphicon"
glyphicon-chevron-right" ></i>User List </a></li>
87 </ul>
88 </li>
89 <li>
90 <a href="#"><? base_url('
systemlogs');?><i class="glyphicon"
glyphicon-tasks ></i> <span>Audit Trail </
span></a>
91 </li>
92 </ul>
93 </section>
94 </aside>
95
96 <div class="content-wrapper">
97 <section class="content-header">
98 <h1>
99 <?php echo $pageHeader; ?>
100 <small></small>
101 </h1>
102 <ol class="breadcrumb">
103 <li><a href="#"><i class="fa fa-
dashboard" ></i> <?php echo $pageTitle;
?></a></li>
104 <li class="active"><?php echo
$pageHeader; ?></li>
105 </ol>
106 </section>
107
108 <?php if( isset( $message ) ) : ?>
109 <div class="col-xs-offset-0 col-xs-12">
110 <div class="alert alert-<?=( $message[ 'type
'] ) ?> alert-dismissable">
111 <button type="button" class="close" data-171
dismiss="alert" aria-hidden="true"> </
button>
112 <h4><i class="icon fa fa-<?=( $message[ '
icon' ] ) ?>></i> <?php echo $message[ 'text'
]; ?></h4>
113 </div>
114 </div>
115 <?php endif; ?>
116
117 <section class="content">
118 <div class="row">
119 <div class="col-md-12">
120 <div class="box box-primary">
121 <div class="box-header">
122 <h3 class="box-title">User
Information </h3>
123 </div>
124 <?php echo form_open( 'users/
insert'); ?>
125 <div class="box-body">
126 <div class="col-sm-6 invoice
-col">
127 <div class="form-group">
128 <label for="username">
Username <i class="glyphicon glyphicon-
asterisk" style="color:red"></i></label>
129 <input type="text" class
="form-control" id="username" name="
username" placeholder="Enter Username"
required="required">
130 </div>
131 <div class="form-group">
132 <label for="password">
Password <i class="glyphicon glyphicon-
asterisk" style="color:red"></i></label>
133 <input type="password"
class="form-control" id="password" name="
password" placeholder="Enter Password"
required="required">
134 </div>
135 <div class="form-group">
136 <label for="firstName">
First Name </label>
137 <input type="text" class
="form-control" id="firstName" name="
firstName" placeholder="Enter First Name"
>
138 </div>
139 <div class="form-group">
140 <label for="lastName">
Last Name </label>
141 <input type="text" class
="form-control" id="lastName" name="
lastName" placeholder="Enter Last Name">
142 </div>
143 <div class="col-sm-6 invoice
-col">
144 <div class="form-group">
145 <label for="emailAd">
Email Address </label>
146 <input type="email"
class="form-control" id="emailAd" name="
emailAd" placeholder="Enter Email Address"
>
147 </div>
148 <div class="form-group">
149 <label for="birthDate">
Date of Birth </label>
150 <input type="date" class
="form-control" id="birthDate" name="
birthDate">
151 </div>
152 <div class="form-group">
153 <label>Sex </label>
154 <div class="radio">
155 <label>
156 <input type="radio"
id="femaleRadio" name="sex" value="
female" />
157 Female
158 </label>
159 </div>
160 <div class="radio">
161 <label>
162 <input type="radio"
id="maleRadio" name="sex" value="male"
/>
163 Male
164 </label>
165 </div>
166 </div>
167 </div>
168 </div>
169 <center>
170 <button type="button"
class="btn btn-primary" data-toggle="
modal" data-target="#userModal">Add User
</button>
171 <button type="reset" class
="btn btn-default">Clear </button>
172 </center>
173 </div>
174 </div>
175 </div>
176 <div>
177 <div class="modal fade" id="
userModal" tabindex="-1" role="dialog"
aria-labelledby="myModalLabel" aria-
hidden="true">
178 <div class="modal-dialog">
179 <div class="modal-content">
180 <div class="modal-header">
181 <button type="button" class=
"close" data-dismiss="modal" aria-label="
Close"><span aria-hidden="true">&times;</
span></button>
182 <h4 class="modal-title">Are
you sure you want to add new user? </h4>
183 </div>
184 <div class="modal-footer">
185 <button type="submit" class=
"btn btn-primary">Add User </button>
186 <button type="button" class=
"btn btn-default" data-dismiss="modal">
Cancel </button>
187 </div>
188 </form>
189 </div>
190 </div>
191 </div>
192 </div>
193 </div>
194 </div>
195 </section>

```

```

196 </div>
197 <footer class="main-footer">
198 <div class="pull-right hidden-xs">
199 <strong>Copyright &copy; 2015 <a href="#">
IMBB</a>.</strong> All rights reserved.
200 </div>
201 " width="35px"
></img>
202 " width="35
px"></img>
203 " width="35
px"></img>
204 </footer>
205
206 </div>
207
208 <script src="<?php echo base_url("public_html/216
vendor/plugins/jquery/jquery-2.1.4.min.js
"); ?>"></script>
<script src="<?php echo base_url("public_html/
vendor/bootstrap/js/bootstrap.min.js");
?>" type="text/javascript"></script>
210 <script src="<?php echo base_url("public_html/
vendor/adminlte/js/app.min.js"); ?>" type
="text/javascript"></script>
211 <script src="<?php echo base_url("public_html/
vendor/plugins/datatables/jquery.
dataTables.min.js"); ?>" type="text/
javascript"></script>
212 <script src="<?php echo base_url("public_html/
vendor/plugins/datatables/dataTables.
bootstrap.min.js"); ?>" type="text/
javascript"></script>
213
214 </script>
215 </body>
216 </html>

```

## Listing 42: User/index.php

```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <meta charset="UTF-8">
5 <title>IMBB BSSMS | Dashboard</title>
6 <meta content="width=device-width, initial-
scale=1, maximum-scale=1, user-scalable=
no" name="viewport">
7 <link href="<?php echo base_url("public_html
/vendor/bootstrap/css/bootstrap.css"); ?>"
rel="stylesheet" type="text/css" />
8 <link href="https://maxcdn.bootstrapcdn.com/48
font-awesome/4.3.0/css/font-awesome.min.
css" rel="stylesheet" type="text/css" />
9 <link href="https://code.ionicframework.com/
ionicons/2.0.1/css/ionicons.min.css" rel=
"stylesheet" type="text/css" />
10 <link href="<?php echo base_url("public_html
/vendor/plugins/datatables/dataTables.
bootstrap.css"); ?>" rel="stylesheet"
type="text/css" />
11 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/AdminLTE.min.css");
?>" rel="stylesheet" type="text/css" />
12 <link href="<?php echo base_url("public_html
/vendor/plugins/iCheck/square/blue.css");
?>" rel="stylesheet" type="text/css" />
13 <link href="<?php echo base_url("public_html
/vendor/adminlte/css/skins/skin-blue.css"
); ?>" rel="stylesheet" type="text/css"
/ >
14 <link href="<?php echo base_url("public_html
/assets/css/system.css"); ?>" rel="
stylesheet" type="text/css" />
15 <!--[if lt IE 9]>
16 <script src="https://oss.maxcdn.com/
html5shiv/3.7.2/html5shiv.min.js"></
script>
17 <script src="https://oss.maxcdn.com/respond
/1.4.2/respond.min.js"></script>
18 <![endif]-->
19 </head>
20
21 <body class="skin-blue sidebar-mini">
22 <div class="wrapper">
23 <header class="main-header">
24 <a href="<?php echo base_url('dashboard');
?>" class="
" logo">
25 <span class="logo-mini"><b>BSS</b></span>
<b>MS</b></span>
26 <span class="logo-lg"><b>IMBB BSSMS</b></
span>
27 </a>
28 <nav class="navbar navbar-static-top" role="
navigation">
29 <a href="#" class="sidebar-toggle" data-
toggle="offcanvas" role="button">
30 <span class="sr-only">Toggle navigation
</span>
31 </a>
32 <div class="navbar-custom-menu">
33 <ul class="nav navbar-nav">
34 <li class="dropdown user user-menu">
35 <a href="#" class="dropdown-toggle"
data-toggle="dropdown">
36 " class="user-image" alt="User
Image"/>
37 <span class="hidden-xs"><?php echo $this
->session->userdata('logged_in')[
'firstname']; ?></span>
38 </a>
39 <ul class="dropdown-menu">
40 <li class="user-header">
41 " class="img-circle" alt="User
Image" />
<p>
<?php echo $this->session->userdata('
logged_in')[ 'fullname']; ?>
<small style="color:#00c0ef;">
<?php echo $this->session->userdata('logged_in
')[ 'is_sysadmin']; ?> System Administrator
: ' ' ) ?></small>
</p>
</li>
<li class="user-footer">
<div class="pull-right">
<a href="<?php echo base_url('
authenticate/logout'); ?>" class="btn btn-
default btn-flat">Sign out</a>
</div>
</li>
</ul>
</div>
</nav>
</header>
<aside class="main-sidebar">
<section class="sidebar">
<div class="user-panel">
<div class="pull-left image">
"
class="img-circle" alt="User Image" />
</div>
<div class="pull-left info">
<p><?php echo $this->session->userdata('
logged_in')[ 'fullname']; ?></p>
</div>
</div>
<ul class="sidebar-menu">
<li class="header"></li>
<li class="treeview">
<a href="#"><i class="glyphicon
glyphicon-tasks"></i><span>Projects </
span></a>
<ul class="treeview-menu">
<li><a href="<?php echo base_url('
projects/create'); ?>"><i class="glyphicon
glyphicon-chevron-right"></i><span>New Project
</a></li>
<li><a href="<?php echo base_url('
projects'); ?>"><i class="glyphicon
glyphicon-chevron-right"></i><span>Project List
</a></li>
</ul>
</li>
<li class="active">
<a href="#"><i class="glyphicon
glyphicon-tasks"></i><span>Users </
span></a>
<ul class="treeview-menu">
<li><a href="<?php echo base_url('
users/create'); ?>"><i class="glyphicon
glyphicon-chevron-right"></i><span>New User </a
></li>
<li class="active"><a href="
<?php echo base_url('users'); ?>"><i class="
glyphicon glyphicon-chevron-right"></i>
User List </a></li>
</ul>
</li>
<li>
<a href="<?php echo base_url('
systemlogs'); ?>"><i class="glyphicon

```

```

glyphicon-tasks ' </i> <span>Audit Trail</span></a> </li> <td></td>
89 span></a> </li> <td></td>
90 </ul> <td></td>
91 </section> <td></td>
92 </aside> </tr>
93 <div class="content-wrapper"> <tbody>
94 <section class="content-header"> <tfoot>
95 <h1> <tr>
96 <?php echo $pageHeader; ?> <th>Active</th>
97 <small></small> <th>Username</th>
98 </h1> <th>First Name</th>
99 <ol class="breadcrumb"> <th>Last Name</th>
100 <li><a href="#"><i class="fa fa- <th>Email Address</th>
dashboard"></i> <?php echo $pageTitle; <th>Sex</th>
?></a></li> <th>Date of Birth</th>
101 <li class="active"><?php echo </tr>
$pageHeader; ?></li> </tfoot>
102 </ol> </table>
103 </section> </div>
104 <section class="content"> </div>
105 <div class="row"> </div>
106 <div class="col-xs-12"> </div>
107 <div class="box"> </div>
108 <div class="box-header"> </div>
109 <h3 class="box-title">Users</h3> </div>
110 </div> </div>
111 <div class="box-body"> <div class="main-footer">
112 <table id="example1" class="table <div class="pull-right hidden-xs">
table-bordered table-hover"> <strong>Copyright &copy; 2015 <a href="#">
<thead> IMBB</a>. </strong> All rights reserved.
113 <tr> </div>
114 <th>Active</th> Username</th> vendor/img/IMBB.png"); ?>" width="35px"
116 <th>First Name</th> ></img>
117 <th>Last Name</th> Email Address</th> Sex</th> Date of Birth</th>    </div>
124 <tbody> </div>
125 <?php if( $users != null ) : ?> </div>
126 <?php foreach($users as $row): ?> <script src="<?php echo base_url("public_html/
127 <tr> <script src="<?php echo base_url("public_html/
128 <td><a href="<?=> ($row-> vendor/plugins/jquery/jquery-2.1.4.min.js
is_active = 1 ? base_url('users/ >"); ?>"></script>
deactivate/' . $row->id) : base_url('users/ <script src="<?php echo base_url("public_html/
activate/' . $row->id) ?>" class="btn btn- vendor/bootstrap/js/bootstrap.min.js");
default"><i class="<?=> ($row->is_active ?>" type="text/javascript"></script>
= 1 ? 'glyphicon glyphicon-ok' : ' <script src="<?php echo base_url("public_html/
glyphicon glyphicon-remove') ?>" style=" vendor/adminlte/js/app.min.js"); ?>" type
= "text/javascript"></script>
<?=> ($row->is_active == '0' ? 'color:red <script src="<?php echo base_url("public_html/
': '') ?>"></i></a></td> <script src="<?php echo base_url("public_html/
129 <td><?=> $row->username?></td> <script src="<?php echo base_url("public_html/
130 <td><?=> $row->firstname?></td> <script src="<?php echo base_url("public_html/
dataTables.min.js"); ?>" type="text/
javascript"></script>
131 > <script src="<?php echo base_url("public_html/
132 <td><?=> $row->lastname?></td> <script src="<?php echo base_url("public_html/
133 <td><?=> $row->email?></td> <script src="<?php echo base_url("public_html/
134 <td><?=> $row->birthdate?></td> <script src="<?php echo base_url("public_html/
bootstrap.min.js"); ?>" type="text/
javascript"></script>
135 </tr> <script type="text/javascript">
136 <?php endforeach;?> <script src="<?php echo base_url("public_html/
137 <?php else: ?> <script src="<?php echo base_url("public_html/
138 <tr> <script src="<?php echo base_url("public_html/
139 <td>no available <script src="<?php echo base_url("public_html/
data</td> <script src="<?php echo base_url("public_html/
140 <td></td> </script>
</body>
</html>

```

## **XI. Acknowledgement**

First and foremost, I would like to thank God for every thing, especially for this very special gift. God, thank you for giving me strength and guidance. Thank you for granting me this kind of reward. You are so great and powerful.

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